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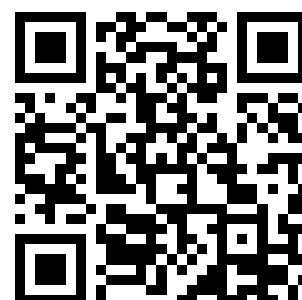
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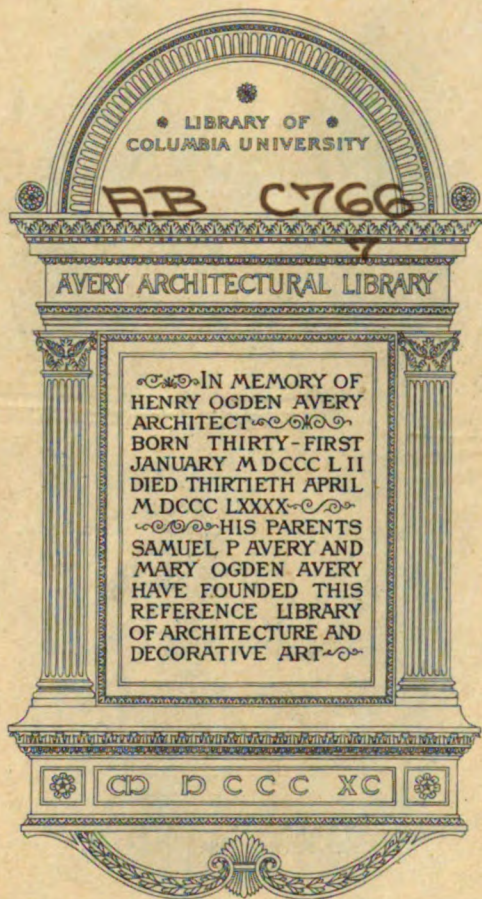


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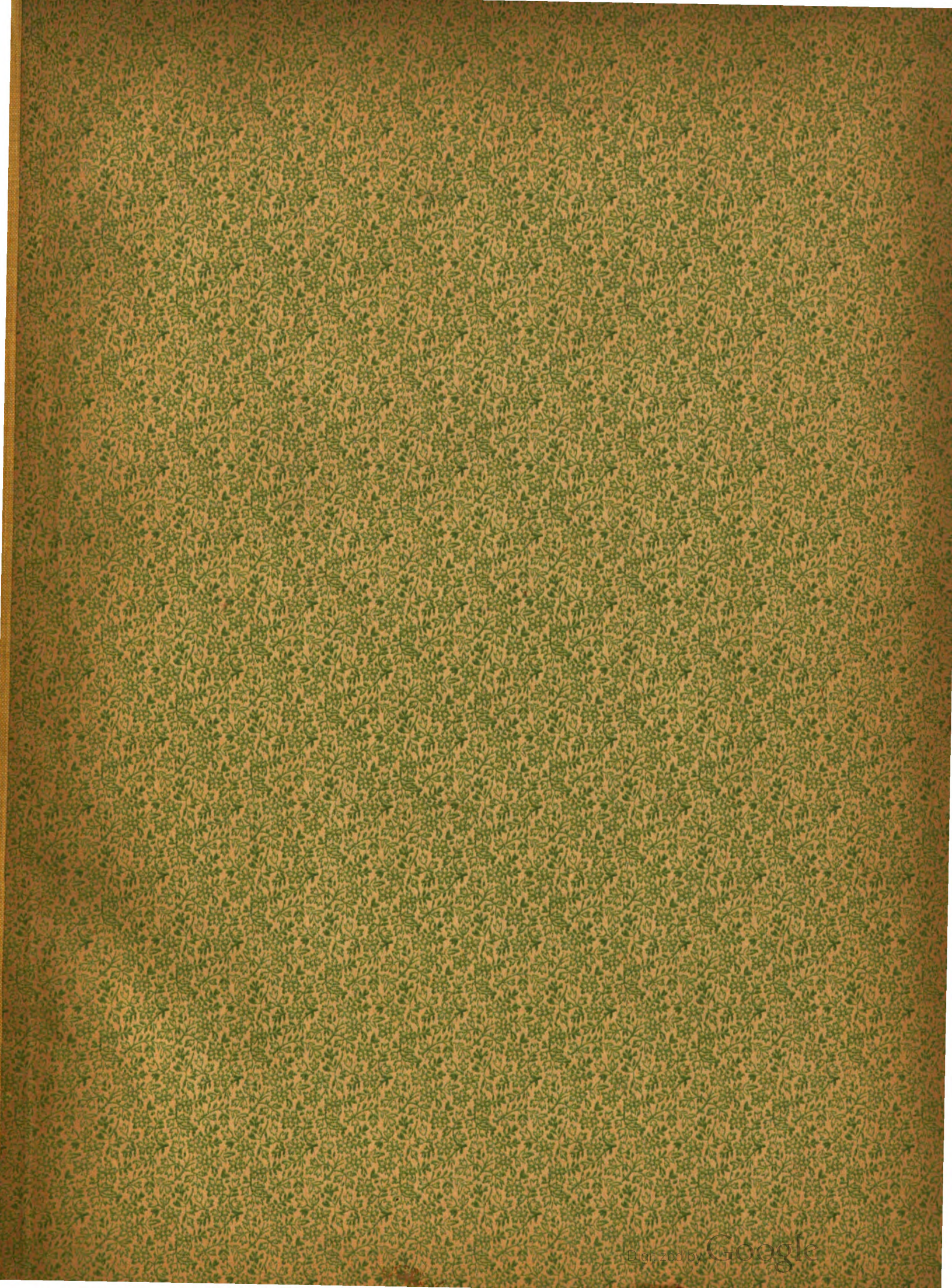


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THE NATIONAL FIRESAFE BUILDING PUBLICATION

# CONSTRUCTION

WITH A DEPARTMENT DEVOTED TO  
SAFE HOMES

JULY 1918



VOLUME SEVEN

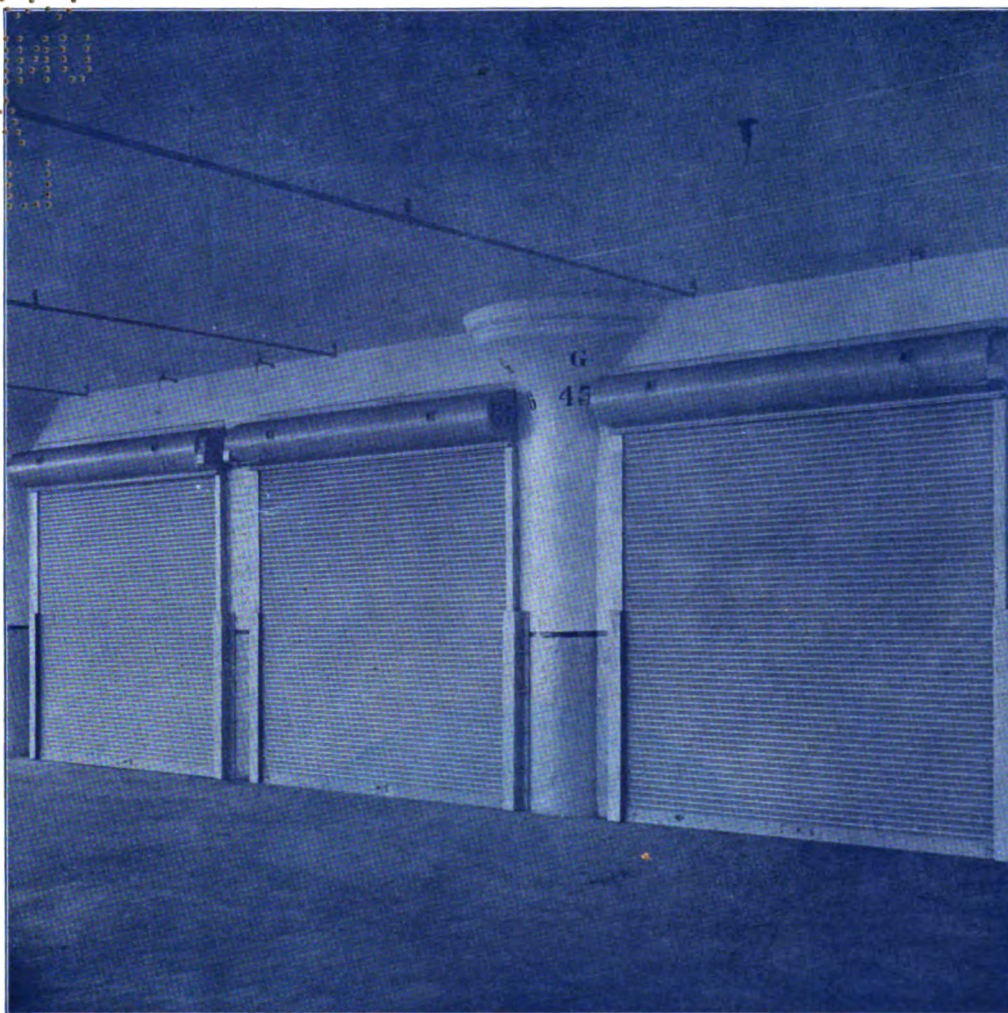
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"Originators of the Asphalt Shingle"  
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

George A. Watson, Editor  
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George H. Stewart, Business Manager

Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

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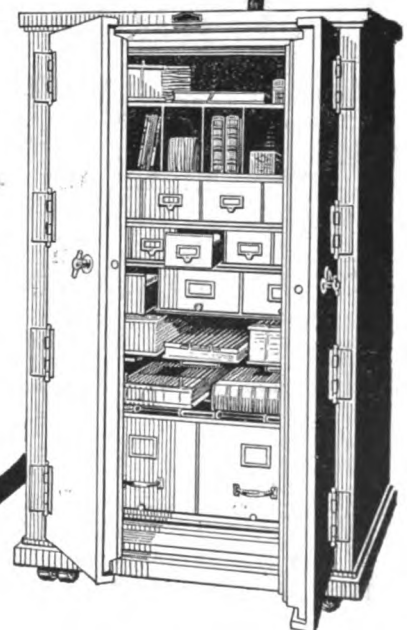
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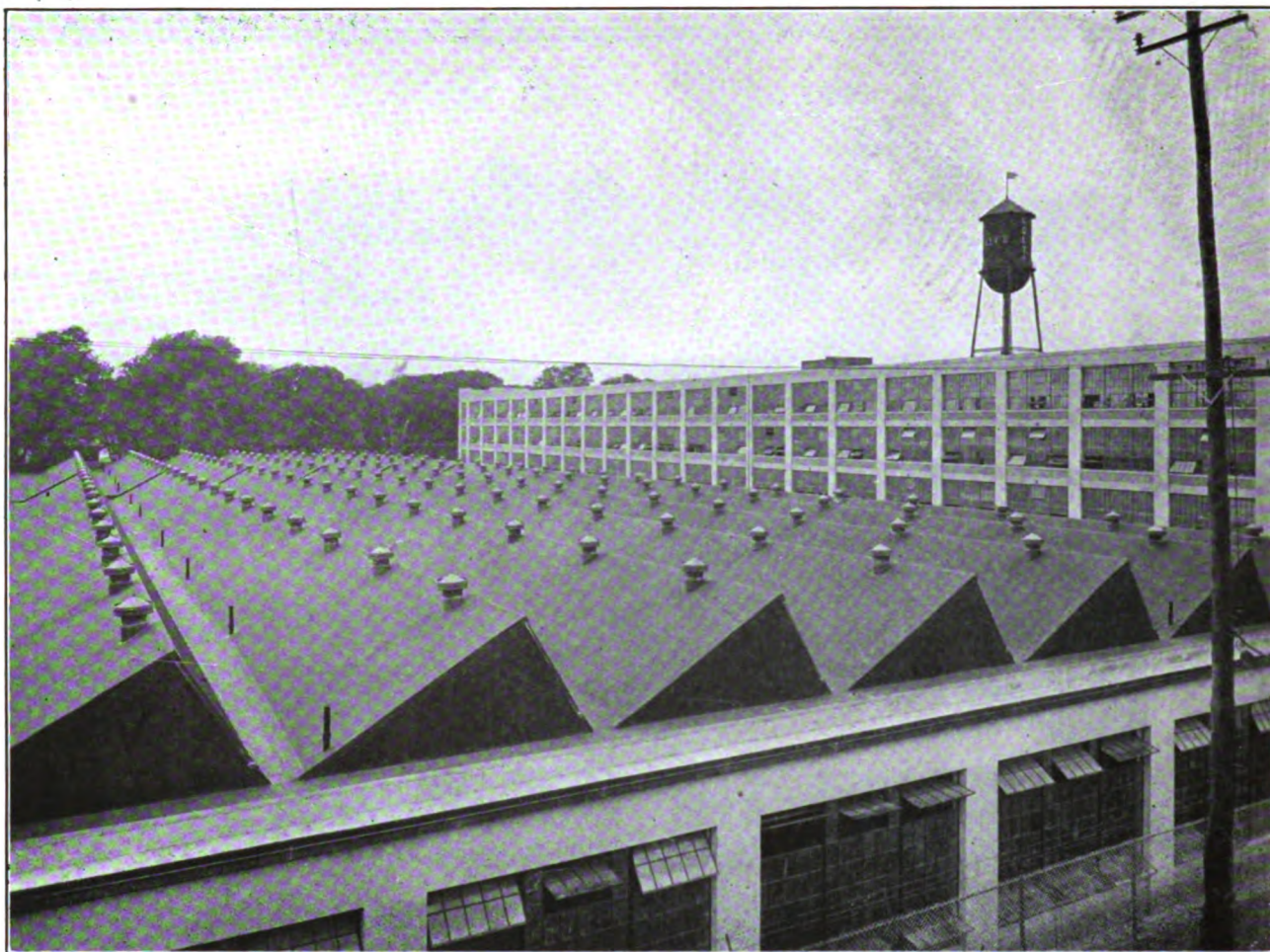
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

VOL. VII

JULY, 1918

No. 1

## *Postponement of Building Operations*

CORPORATIONS and individuals in every section of the country seem obsessed with the belief that the present cost of building material and labor is bound to show a substantial reduction, if not in the near future, certainly after the war ends, and are postponing all major construction work on that account.

Those who have given the matter attentive study, are firmly of the opinion that not for a long period of years, if at all, will labor costs be much below prevailing figures. And by labor cost is meant the average wage paid mechanics in building construction circles, not the extravagant figures given ship builders and those employed in munition and other strictly war industries, where a constant and large output is essential and a heavy premium is given workers to induce that end.

Following the war, it is pointed out by students of the building situation, a vast amount of new construction will be required in Continental Europe to replace the ravages of war, and a substantial if not the major portion of the masonry and steel needed will be supplied by the United States.

As the call will be for enormous aggregates of material, so it will be for skilled workers, and as there will be fewer by several million than before the war, because of deaths or disablements, the law of supply and demand may be counted upon to maintain wages at present standards for years, with every likelihood of their increasing.

And the call for intensive new building will come not alone from the old world, but from this country as well. Here, aside from the erection of factories, shops or warehouses to further some phase of war activity, building has been at a standstill for almost a year; creating a shortage of accommodation in mercantile, industrial and residential properties that cannot much longer go unsatisfied.

Because of these conditions it is easy to understand the conclusion of the experts that they who postpone

building operations in the expectation of securing lower prices are destined to severe disappointment, and that the wise conclusion would be to prepare plans at once for whatever type of structure is desired, and order its erection as soon as labor and material are available.

### **Would Protect Public Documents**

Declaring that the danger of fire in the State, War and Navy Building is so great as to invite a catastrophe, Senator Calder of New York has introduced a resolution into Congress directing the Secretary of War to transmit to the Senate a copy of the report made by the National Board of Fire Underwriters on the condition of the building.

"I offered this resolution because of my great interest in the condition of the State, War and Navy Building," said Mr. Calder on the floor of the Senate. "Last December I observed that in one of the interior courts of that building a frame structure had to be beched which never would have been permitted in any other building of like character in this country. Perhaps my complaint to the officials of the War Department had something to do with having placed in that building proper fire apparatus and a sprinkler system which, however, in cases of fire would be of little value. I have more carefully examined the building since and because of the fact that we have stored in it valuable documents of the Government, including the original Declaration of Independence, our treaties with foreign governments and the important records of the army and navy, it seemed to me desirable that these facts regarding the building should be brought to the attention of the Senate."

The resolution was agreed to without debate.

Far too little care is exercised in the erection of public buildings to properly safeguard them, and their oftentimes unreplaceable contents against fire. During times of stress such as now exist our public buildings should be protected to the last possible degree.

## ***Warns Against Wood Shingle Roofs***

OWNERS of grain elevators in Nebraska are warned by Fire Marshal W. S. Ridgell of that State, to be unusually alert in safeguarding their properties against danger from fire. Mr. Ridgell notes especially the menace of wood shingle roofs, and strongly recommends that these be replaced with fire resistive coverings.

The letter of the Marshal reads:

"During the first six months of 1917, losses on mill and elevator property in our State were exceedingly heavy. In June the Conservation Association of Nebraska was organized and a systematic inspection made of all food handling properties. There was not a single fire of any consequence in the State from the time this work had gotten under way until February 1 of this year. This shows what can be done. It is very evident, however, that the same precautions that were being taken have not been continued, as in the last three months both mill and elevator losses have been as numerous as in the early months of 1917. Now this cannot be allowed to continue. Every man in your employ must be made to feel his responsibility and to realize that it is little less than a crime for any food products to be destroyed by fire through his carelessness or negligence.

"During the present slack season all properties should be given a thorough cleaning and machinery should be gone over carefully to see that everything is in shape for handling the new crop. There will be a large crop of grain to be moved and this means that your plant will be worked to the limit—more especially during the early part of the season. You will have no time then to stop and make repairs and changes. Now is the time to do this. Dirt is a breeder of fire. Clean your house now and clean it well and keep it clean. Go over your machinery carefully, especially the elevator legs, buckets and boots and see to it that they are in proper shape for the strenuous work to be done. Examine them frequently. Many of the 'unknown' fires originate there.

"Losses from railroad sparks have been exceedingly heavy, especially along the Union Pacific and Burlington, on account of the railroads using a low grade of soft coal and the only way to handle this is to replace all shingle roofs with fire resisting roofs. See that your fire-fighting facilities are in shape. Test out your extinguishers and see that they are properly refilled. If your plant is equipped with standpipe and hose, have it all gone over carefully and see that it is in order and effective. See that barrels are filled with water and fire buckets are in place. Be prepared always. Remember that if your plant should burn now, you probably would not be permitted to rebuild

until after the war. During the next six months every elevator and mill owner should personally inspect his property at least twice a month to see that proper precautions are being taken. What does it profit our cause if you buy Liberty bonds and give to the Red Cross and then through carelessness allow thousands of bushels of grain to be destroyed?"

---

### **Industrial Home Building at Tacoma**

AT an estimated cost of \$1,600,000 homes for the families of 2,000 of the 11,000 workers in Tacoma, Wash., shipyards will be built within a short time. This development, it is expected, will simply be the forerunner of others of like character. All industries at Tacoma are running to capacity and the constant cry is for additional housing facilities.

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### **Concentration of Railway Ticket Offices**

WHILE the action of the Federal Government in merging into one large office the hitherto independent and separated railway ticket offices in the large cities of the country, has resulted in a great saving in rental, it has worked a distinct hardship upon numerous property owners, who have lost desirable and long established tenants.

The centralizing of ticket agencies, moreover, has had the effect of creating new and disturbing old business centers, for numerous allied interests were located near the former agencies and are now forced to move to keep in contact with their trade.

The change in locations has been followed—or shortly will be—by the erection of new buildings or the conversion of old properties to meet new demands. Of course, this is not an unmixed evil though the suddenness with which the Government enforced its program left little opportunity for the affected interests to formulate and execute new plans necessitated thereby.

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### **Fire Waste in Canada**

FIFTY million dollars went up in smoke last year in Canada—physical property, buildings, industrial plants—to say nothing of the value of business "goodwill" and other intangible business assets in the form of irretrievable records and valuable business documents that went with this huge loss. It cannot be disputed that this is largely the result of carelessness and deplorable unpreparedness. Experts make the statement that at least half of this enormous loss can be prevented if taken in hand seriously.



### Joins Gypsum Industries Association

**T**HAT the Gypsum Industries Association plans a more vigorous effort to popularize the use of gypsum with members of the building fraternity than it has attempted hitherto, is attested through the appointment of Virgil G. Marani, as chief engineer of the organization.

A widely known authority upon engineering subjects, Mr. Marani has devoted special study to gypsum products and their relation to building construction. The information he has gathered upon the subject is freely placed at the disposal of architects, engineers, contractors or others properly interested.

Mr. Marani, who is well-known to readers of CONSTRUCTION, has had an interesting professional career. He was graduated from the civil engineering depart-

ment of Building, which involved an expenditure of five million dollars. In 1910 and 1911 he was Building Commissioner of the City of Cleveland and revised its building code, particularly Section 10, relating to reinforced concrete, which is still in use. He further prepared a thoroughly modernized building code for Trenton, N. J., and other important cities.

In 1912 Mr. Marani had charge of the erection of floors and fireproofing in the Leader-News, Hollenden Hotel and other large buildings in Cleveland.

For the last five years he has been consulting engineer for the United States Gypsum Company, being also in charge of its information and promotion department.

Mr. Marani has the distinction of membership in the American Society of Civil Engineers, American Society of Testing Materials, National Fire Protection Association, British Fire Prevention Committee, Society Advocating Fire Elimination and the Cleveland Engineering Society.



**VIRGIL G. MARANI,**  
Chief Engineer Gypsum Industries Association

ment of Toronto University in 1893. The following year he was on the force of Mann & White, engaged on canal work for the City of Buffalo. He was then sanitary engineer for Cleveland, Ohio, and from 1896 was for ten years construction engineer for the Cleveland Gas, Light & Coke Company.

He then opened private offices in Cleveland and had supervision of the Cuyahoga County Court House

### Building Activity in New York State

**R**EPORTS of building activity in New York State for May, 1918, in first and second-class cities, show that the estimated cost of building work authorized amounted to \$9,200,000. This is an increase of 8 per cent. over April, but contrasted with May of a year ago, it is a decrease of 16 per cent. The costs of building work reported in May, 1917, 1916, and 1915 were, respectively, 11, 33, and 29 millions of dollars. The boroughs of Brooklyn and Queens filed plans for May, 1918, showing larger expenditures than in May, 1917, as did also the cities of Schenectady and Yonkers. The boroughs of Manhattan, Bronx, and Queens, show larger operations in May, 1918, than in April, 1918, as did likewise the cities of Schenectady, Syracuse and Troy. A table compiled gives the estimated cost of work authorized and the percentage of change from April to May of this year, and from May, 1917, to May, 1918.

### Charlotte, N. C., Gets Shingle Roof Lesson

**A**N expensive object lesson as to the wood shingle menace was afforded the citizens of Charlotte, N. C., some days ago, when forty-seven dwellings, all covered with wooden roofs were burned. Efforts to induce the municipal authorities to adopt an ordinance prohibiting the further use of wooden shingles, had repeatedly been made by State Commissioner Young and others, but without avail. It is to be hoped that the complete loss of a considerable number of homes will induce the enactment of the needed safety measure.

## ***New York Lacks Homes for Normal Growth***

**T**HE Real Estate Board of New York has just issued a report showing the available warehouse space and residential accommodations in New York City, which data have been gathered for the use of the United States Government in carrying on the war. It was found that in the Borough of Manhattan the amount of available warehousing space, including properties available through alteration, was 3,425,745 square feet, and in the Borough of Brooklyn, 918,565 square feet, including 700,000 square feet contained in five vacant breweries. There is practically no available warehousing space in the Bronx, none in the Borough of Richmond and none in the Borough of Queens. This makes a total in the entire city of 4,344,310 square feet. When it is considered that the great warehousing storage structure being erected by the Federal Government adjacent to the Bush Terminal in Brooklyn, will contain 11,000,000 square feet, it will be readily seen that the amount of available space in the entire city is alarmingly small.

In making the survey suitable for accommodating industrial workers a rental of \$50 per month was fixed as the maximum. It was found that in Manhattan there were 3,923 vacant apartments of that type; in Brooklyn, 3,341, of which 2,499 were rentable at less than \$25 per month. In the Borough of the Bronx there were practically no vacancies, nothing in Queens and nothing in Richmond, although in Richmond there are a number of large old-fashioned private houses which could be altered into two or three-family dwellings, though at considerable expense. The total for the five boroughs is thus shown to be 7,264 vacant apartments.

### **Building Less Than 25 Per Cent.**

The report emphasizes the fact that owing to the reduction of construction of tenements and apartments in 1917, and the still more marked shrinkage in the first half of 1918, not only is there serious shortage of existing housing, but that the city is now building less than 25 per cent. of the requirement for normal times. This appears from the general conclusions of the survey in which the following interesting facts are presented:

"According to the records of the Tenement House Department of the City of New York, it is shown that the total number of apartments existing on January 1, 1918, was 989,766. It can be fairly assumed that of this total 80 per cent. are apartments renting for \$50 or less per month. Applying the average rate of four occupants per apartment, which is the factor used by the Tenement House Department, the total

accommodations in the city of New York as of January 1, 1918, provided for 3,167,248 persons. On the other hand, the normal increase in population, based on the years 1913 to 1916, inclusive, shows an average annual growth of approximately 107,000. Of this increase it can be reasonably assumed that 75 per cent., or approximately 80,000 are apartment dwellers, and that of this 80,000, 80 per cent., or 64,000 pay rentals of \$50 or less per month. Applying the same factor of four occupants to an apartment the normal increase in population in New York City will require at the lowest calculation, approximately 16,000 new house-keeping units annually.

"The new apartment units built during the past five years, assuming the same 80 per cent. of the total as available at a rental of \$50 per month, or less, were as follows:

|           |        |           |        |
|-----------|--------|-----------|--------|
| 1913..... | 22,430 | 1915..... | 18,893 |
| 1914..... | 16,460 | 1916..... | 17,087 |

"The foregoing totals represent the apartments actually constructed and for which 'certificates of occupancy' were granted by the Tenement House Department.

"Plans filed for 1917, using the same 80 per cent. as covering apartments renting for \$50 or less per month, represent 7,689 units. For the first six months of 1918, owing to the further material decrease in construction as compared with 1917, plans filed provide for approximately 2,000 apartments at rentals of \$50 per month or less.

"This average, therefore, shows that during the years 1913 to 1916, inclusive, only sufficient new apartments were provided to accommodate the normal increase in population, and that in 1917 provision was made for only 50 per cent. of the normal requirements.

"Based on the figures for the first half of 1918, less than 25 per cent. of the requirements for the normal growth of the population are now being constructed, and this statement is based on the reports of plans filed and not of work actually under construction."

War Saving Stamps Should  
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## *How Fires in Cotton Gins Can Be Avoided*

**D**URING the season of 1917 cotton gin losses in Texas were far above the normal. Insurance claims upon buildings and machinery, reported to the State Fire Marshal aggregate \$255,507, which amount it is estimated represents only two-thirds of the actual loss, many properties being but partially insured, while others were not insured at all.

Emphasizing the patriotic duty imposed upon each mill owner and manager of protecting his property against fire, and thereby saving cotton for the numerous uses of the Government, S. W. English, State Fire Marshal of Texas, has prepared a series of rules the careful observance of which will very naturally reduce the number of ginneries and their product destroyed by the flames. We present the rules herewith:—

### **Whitewashing or Painting**

All the interior woodwork of the ginnery must be thoroughly whitewashed, or painted with fire resistive paint, at least once each year.

### **Cleanliness**

Keep the entire premises clean, both inside and out. Clear the inside of the ginnery from any accumulations of lint, motes or trash; this precaution will prevent the rapid spread of flames. Keep the gin yard free of loose lint, grass, weeds, or any accumulations that would aid in the spread of a fire. It will require a daily clean-up to properly obey this rule, but its observance will prevent many serious losses.

### **No Smoking**

Positively there must be no smoking allowed anywhere on the gin yard or inside the ginnery. Careless smokers are responsible for many fires in cotton gins, as well as elsewhere. Matches carried by smokers are responsible for more gin fires than all other causes combined. In the past, it has not been an uncommon sight to see a man on a cotton wagon with a lighted pipe, cigar, or cigarette in his mouth, handling the suction elevator, or awaiting his turn thereat. The ginner who permits such a practice or even permits smoking anywhere on his premises, is inviting a fire. Post "No Smoking" signs at each entrance to gin yard and ginnery, and in other conspicuous places on the premises.

### **Do Not Gin Wet Cotton**

It should not be necessary to warn the experienced ginner that it is dangerous to gin wet cotton. Yet, under pressure and crowded condition, old gin men sometimes take a chance and a fire is the result. Wet cotton clogs the gin stands and the saws, and causes fire by friction.

### **Storage of Cotton**

Seed cotton must not be stored in ginneries. It

is a bad practice to store baled cotton in the gin yard; but if such storage is unavoidable, 100 feet of clear space must be maintained between the cotton and all buildings. Under such circumstances, the cotton could possibly be saved, even though the ginnery burns.

### **Power and Lighting**

The boiler should be cut off or separated from the ginnery by a blank brick wall; but, in any event, the boiler must be located in a separate enclosure. If electric power is used, all motors, wiring, and equipment must be installed and maintained in conformity with the rules of the National Electrical Code. Open fires or lights should not, under any circumstances, be permitted in the ginnery or in any building containing cotton or cotton seed. If electricity is available, all lighting must be by means of incandescent electric lamps, for which the wiring and equipment must conform to the established National Electrical Code. Where electricity cannot be had, closed lanterns burning only vegetable oil may be used.

### **Metal Flues**

All lint flues, battery condensers, and dust flues must be of metal.

### **Barrels and Buckets**

There must be provided not less than two iron hooped or metal barrels, containing, at all times, not less than forty gallons of thoroughly salted water, and two galvanized iron buckets to each barrel, buckets to be submerged inside the barrel, and suitable covering used to keep out dust and lint, and prevent excessive evaporation. Barrels should be arranged along sides and ends of gin house within 10 feet of gin stands and press. If more than two gin stands are used, there must be one such barrel with two buckets to each two gin stands. A little slaked lime in the water will prevent its becoming foul.

### **Chemical Extinguishers**

There must be provided not less than two approved chemical fire extinguishers to every two gin stands in use. If the ginnery is of the two-story type, there must be one or more chemical extinguishers on the ground or first floor. Chemical extinguishers must be hung on posts or uprights in conspicuous places, conveniently located, and easily accessible. Soda and acid type extinguishers must be re-charged once each year, and have tag attached showing date last re-charged.

### **Steam Jets**

An open steam pipe or jet must be located in the end of each lint flue, and one in the bottom of each battery condenser. The steam jets must run from the top or dome of the boiler, be not less than  $\frac{3}{4}$  of

an inch in diameter, and both be controlled by one quick opening lever valve, located not less than 5 feet above the gin stand floor, and in a readily accessible place.

#### **Standpipes and Hose**

Where there is a water supply, either from public mains, or a private tank, there must be provided two or more 2 inch pipes to the gin house, and to have connected with pipes on each floor not less than 50 feet of 1½ inch approved hose, in good condition, with nozzles attached. Where tanks are installed to comply with this rule, the bottom of the tank should be ten feet above peak of gin house roof, and have not less than two thousand gallons' capacity.

#### **Fire Brigade**

The gin employees must be organized into a fire brigade under a competent leader. Each member of the brigade must be given a definite part of the fire fighting facilities to handle, and drills must be conducted until each member of the brigade, at the call of "Fire," will know exactly what he is to do and how to do it. It is worse than useless to equip a ginnery with standard fire fighting equipment, and have no organization to handle it. In one of the 1917 gin fires investigated by this office, it was learned that although chemical fire extinguishers had been provided, at the alarm of fire the employees quit the building, and the extinguishers were permitted to burn unused.

#### **Watchman**

An able bodied intelligent watchman should be on duty at nights, Sundays and other days when ginnery is not in operation during the season, and especially when there is an accumulation of cotton or seed; and none but Americans should be employed for this important service. An approved clock should be provided, and stations so arranged that a thorough patrol will be had half-hourly at night and hourly in day time. Watchman must be familiar with all fire fighting equipment, its location, and how to use it.

#### **"The Gin Bale"**

The term "Gin Bale" has been applied by underwriters to the bale of cotton in the gin and press when a fire occurs. It frequently happens that, when a fire occurs in a ginnery, a spark or piece of burning lint will find its way into the press, be packed in the bale, and, although there is no evidence of fire when the bale is turned out, it is in fact on fire inside and will finally burn to the surface. Many serious fires in warehouses, cotton yards, and in compresses have been caused by the "gin bale." This condition may occur without fire having been discovered, but it is certainly the part of prudence that the bale or bales in the ginnery at the time a fire is discovered should

not be stored with other cotton, but should be isolated for a period of not less than forty-eight hours. The rules of the Federal Warehouse Act prohibit the storage of cotton which has been on fire with other cotton. Also the rules of the State Warehouse and Marketing Department governing this particular danger must be strictly observed.

#### **General Precautions**

Thoroughly wet down all cinders and ashes immediately upon removal from furnace or ash pit before carting to the outside.

Close all openings in ginnery facing upon railroad tracks where locomotives pass, if within 100 feet.

Do not stack cord wood or other combustible material within 50 feet of ginnery or stored cotton.

Do not flood journal boxes with oil, causing overflow on machinery and floor. The installation of standard oil cups is desirable and will soon save enough oil to pay for themselves.

If oil is used for fuel see that the installation of equipment is standard and keep it in good order by constant care and attention; otherwise, a serious fire hazard will arise.

Remember that when ginning very dirty cotton or bollies, fire danger is increased, and instruct your help to be extra watchful at such times.

Remember that our country is at war with a resourceful and ingenious foe, and be on the alert at all times for Government enemies—and remember that carelessness is their most powerful and most dangerous ally in this country.

#### **Cotton Yards and Warehouses**

Rule 2—Cleanliness, Rule 3—No Smoking, and Rule 8—Barrels and Buckets, must be strictly observed in every case. To comply with Rule 8 in yards and warehouses, there must be one forty gallon barrel and two buckets to each 1,500 square feet of storage area, said barrels and buckets to be well distributed and well cared for. Rule 11—Standpipes and Hose, must be complied with where a water supply is available, either from a public or private source. Rule 13—Watchman must be complied with during the period of the war when any considerable quantity of cotton is in storage.

#### **Marker Posts**

In open yards, there must be marker posts designating the storage limit, and weeds, grass, or accumulations of other combustible material must not be permitted within 100 feet of such limits.

#### **Samples, Picking or Reconditioning and Tying**

All samples or loose cotton must be kept entirely away from storage area. Picking or reconditioning must not be done on storage area or within 100 feet thereof. No tying of cotton must be permitted.



## ***Concrete as a Housing Material for Industrial Workers***

**T**HE broad, concrete basis upon which industrial housing is being undertaken with particular relation to labor turnover, makes of vital importance a weighing of first cost as compared with ultimate costs. And so permanence and reduced upkeep as represented by concrete or brick are being sought rather than the slightly lower first cost that pertains to the frame building.

At the recent meeting of the American Concrete Institute, Leslie H. Allen, of the Aberthaw Construction Co., Boston, acting as chairman of the committee on Industrial Concrete Houses, presented a report from which the following interesting extracts are taken:

### **Concrete House Here to Stay**

The concrete house is now an accomplished fact. It has come to stay. For many years experiments have been made with many types. Many of the earlier houses were quite unsuitable and showed defects, but the later examples are much improved, the earlier defects are being eliminated and the concrete house as built today is a thoroughly sanitary, weatherproof, permanent and fireproof home. It approaches more nearly the ideal home than any other type of construction.

The investigations of the committee have not shown that a concrete house can be built more cheaply than a wooden frame house. The relative cost of course varies in different localities according to the availability of different types of material, but speaking generally we find that the cost of a concrete house should run from 10 to 15 per cent. more than the cost of a well constructed frame house.

The advocates of the concrete house must repay upon the superior merits of concrete as a material and not upon its low first cost.

Three principal types of concrete house construction are the concrete block, the precast house and the monolithic house. We have not pushed our studies into the stucco house or cement-gun covered house, which seem to be outside of the scope of the committee. The general conclusions of the committee as to the merits of the various methods are that for small jobs the concrete block house stuccoed on the outside is the best solution but for large developments in which more than fifty or sixty houses are required the monolithic or precast types, show an economy in cost and speed that should place them in the foreground.

In any type of concrete house construction difficulties are sure to be met with. Some of these are discouraging to the contractor entering this field and are likely to hinder its expansion unless faced and over-

come. The committee have thought it well to discuss them frankly in order to guard the novice against disappointment and failure. Realizing as we do that these difficulties are incidental only and not insuperable, the successful work done is sufficient answer to any objections raised that concrete house construction is too difficult or impossible.

### **Some Basic Ideas**

The committee has not come to any conclusion as to how much of the house should be built of concrete. Accordingly the members have presented their divergent views in their papers rather than attempt to come to any agreement so quickly. It is certain that the concrete wall offers great advantage due to its fireproof, weatherproof and permanent qualities. It should be furred inside. It should cost about the same as a brick wall or slightly less. A concrete floor should cost about 18c. per sq. ft. more than a wood floor. Concrete with wood top surface about 30c. per sq. ft. more.

A granolithic floor is advocated by some on account of the ease of cleaning, but for poor families who cannot afford many rugs it is unsuitable and it is unhealthy for small children to play on a cement floor.

When concrete construction is used for constructing outside features like porch columns and roofs and moldings, cornices and ornaments the cost of the house is increased very quickly.

### **A Subject of Widespread Interest**

There is widespread interest in the concrete house today. There is not, however, much active demand for them, owing to the dearth of contractors experienced in concrete work who are entering this new field to create a supply. The majority of the small houses built today are built for quick sale by the vendor and not for investment. House building standards have been low. Competition in prices has been keen but quality has been a secondary consideration. The demand at the present time seems to be for a better type of construction—concrete meets this demand.

The housing program of the Government entrusted to the Shipping Board and the Department of Labor will set forth the standard of housing for many years to come. It is of the utmost importance that these standards should be higher than the low standards that now prevail and especially that the work done be of such permanent character that it may prove to be inadequate security for the funds expended and for long term mortgage bonds at low rates of interest.

Good and sufficient housing is one of the most pressing needs of the nation at this time.

## *The Housing Problem in War and in Peace*

By Dr. John Nolen, Town and City Planner, Cambridge, Mass.

**"Y**OU can't man the works unless you house the man."

That statement from a Cleveland manufacturer is the crux of this housing problem. Yet it is very difficult just now to draw the attention of business men to the broader phases of industrial housing. The shadow of the great war overhangs everything. At the moment it seems as if no problems were worthy of attention except those of the war. On reflection, however, we realize that the successful prosecution of the war rests directly upon the solution of just such problems as industrial housing. Furthermore, the present emergency is drawing our attention still more forcibly to the fact that constructive planning measures are necessary for the upbuilding of the country for both peace and war.

The housing problem will not solve itself either in time of war or peace. At last that is clear. Who, then, is primarily responsible for action? In war time such as the present, I believe that no one can cope with the matter adequately except with Government aid. Government alone, at such a time, has the capital and the power over the essential building materials, and it alone can secure the necessary speed in operations. True, it may work through local agencies of one kind or another to great advantage, but dependence after all must be placed upon the Government for initiative in the matter and the mastery of the many problems involved in what we term industrial housing.

The Government has moved. It has, as you well know, appropriated fifty million dollars to the Shipping Board for use in housing shipyard workers. Large operations are already under way at Philadelphia, Camden, Wilmington, Bristol, New York, Charleston (S. C.), Newport News and elsewhere. In addition, another fifty million dollars has made its way slowly through Congress. The bill awaits now only the signature of the President. Its purpose is to provide for workers in those congested centers upon which the Government is depending for the manufacture of guns and munitions.

### **Local Survey**

In order to have a sound recommendation for a housing problem in any particular place, the Government is requiring a somewhat thoroughgoing local survey. Such a survey should include the official figures with regard to the existing shortage and the number of additional employes to be taken on for a period ahead; a reliable inventory of desirable vacant rooms and dwellings; a summary with exact data of vacant plots of land of relatively small size, and

of large tracts suitable in location and character, and low enough in price, to be used successfully for a workmen's colony. All this information in condensed and if possible graphic form, fully illustrated with maps and photographs, should be made the basis for action.

Of course a survey in itself can do nothing. It can neither provide money nor buy land nor build houses, but it gives essential facts and a business-like program upon which action can be taken with confidence. The results of these surveys and of some actual experience in attempting to provide for the housing shortage has demonstrated that makeshift policies such as the "Take a Lodger" campaign cannot be depended upon to meet the situation. In fact, without better regulation and more painstaking direction than it has already had, this movement is likely to do some harm. Reports have already been received from cities to that effect, notably Bridgeport, indicating a reaction against the movement.

### **Better Housing a By-product of the War**

The war is bringing great changes, many of them permanent, in modern civilization. Some of these are the direct results of the war. Others are what might be called by-products. For example, the military life has placed a new emphasis upon health and strength and recreation, and has pointed the way to practical methods for the physical improvement of men. The requirements for the conservation of food have almost revolutionized the household, and now better as well as more economical diets have actually established themselves in the majority of American homes. The necessity of the Government to have money to meet the well-nigh fabulous costs of the war have almost over night brought into operation systematic habits of thrift and saving which include the richest of the rich and the poorest of the poor, and extend to the smallest child. So it is that we have better housing as a by-product of industrial and military necessity.

The best organization with reference to purposes of production requires the concentration in industrial centers of increased numbers of workers. These men and women must be housed. When existing facilities are exhausted (as they soon are), additional facilities must be created. The approach to the problem is naturally entirely different from that of ordinary times. Both the opportunity and the necessity require the creation promptly, and with all the aids of adequate capital and expert services, the housing facilities of this new and better type can be effected.



### Beware of Cheap House Building

**A** STRONG protest against the erection of cheap homes for industrial workers is made by Noble F. Hoggson, president of Hoggson Brothers, leading builders of New York City.

Mr. Hoggson says in war times all problems are the "most important." It depends upon what is being agitated at any particular time—ships, munitions, airplanes, men, money, etc. Six months ago it was the housing of workmen. Men were sleeping fifteen and twenty in a room, sleeping in three shifts, one man, waiting his turn, routing another out of bed when his eight hours were up. Industrial housing was the question of the hour, the paramount issue—the most important problem.

We do not hear so much about houses for workers today. Is it because the condition has been met? Because the houses have been provided? Not at all! It merely means that we agitated the housing proposition until we found something new to start an agitation about.

Read the technical building journals; scan the various building reports. There is hardly a section that is not clamoring for housing accommodations. In Maine they fear a tent city will have to house part of its new population this coming winter; every munition centre, shipyard locality, industrial town, is almost as bad off in housing facilities as it was months ago. In Kansas, where one would little dream of expanding cities at this time, there is an acute shortage of housing. New oil discoveries have created new towns and boomed old ones.

Of course the problem will be solved, houses will be provided. But the great danger in the delay lies in this: the situation will become so desperate that any kind of shelter provided will be welcome. In other words, on the plea of expediency, there is a great danger of temporary shack construction being thrown up, and the dreams and plans for a constructive housing scheme along permanent lines will fall far short of realization.

The Bureau of Industrial Housing and Transportation of the Department of Labor some months ago, in consultation with Lawrence Veiller, secretary of the National Housing Association, and assisted by a number of notable architects and city planners, adopted a set of standards which is recommended for permanent industrial housing developments. These standards were well conceived and far-seeing. If followed, they would establish housing enterprises on an encouraging basis.

But, no less than in the days at Valley Forge, "these are times that try men's souls," and as the necessity for housing grows more and more acute, the tempta-

tion to throw up temporary structures, even temporary settlements, will be difficult to resist.

Witness this item from the Emergency Fleet News of July 1:

"Although steps are under way to erect about 1,600 homes in Wilmington, the housing situation there, on account of the influx of shipyard and other workers, is so acute that it is proposed to have the City Council lift the ban on frame dwellings, so that ready-made shelters may be erected temporarily. Official moving day in Wilmington is June 25. Many families have been notified to move on that day, and have no place to go. Many complaints have been made of the high rents charged."

The best way to promote the growth of Bolshevism in this country is through maintaining a low standard of living, of continuing to force three men to occupy the same bed in eight-hour shifts, of herding twenty men and more into one room for sleeping quarters.

The solution to a problem of social unrest is through the ministration of social justice. The average worker (the majority) seeks nothing more than a condition of contentment—a family, a decent living wage, a place in the community, the full rights of citizenship. These may be all summed up in "Home."

Housing is not only an immediate problem, it will be one of the big after-the-war problems. Now is the time to solve it, not only for the present, but for the future. We must build real homes, establish real communities, permanent homes and permanent communities. We must do it now, and do it right, before it may be too late.

### Propose Lifting Safety Bars

**A**LTHOUGH plans are underway for the erection of nearly 1,600 homes at Wilmington, Del., the housing situation in the city, mainly on account of the great influx of shipyard workers, is so acute that it is proposed to have the authorities lift the ban upon frame dwellings, so that temporary shelters may be built.

While sympathizing with the desire of the shipbuilders to secure adequate accommodation for their employees, the city fathers of Wilmington yet appreciate the fire menace of frame dwellings, particularly where the congestion is severe and the population unstable. Should a serious fire break out in Wilmington, because of the temporary abandonment of restrictive legislation, the consequence to essential Government work would in all probability prove far more serious than could possibly the delays in transporting the industrial workers.

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## Mason City, Iowa, makes a Record—

In Mason City, Iowa, 22,000 population, \$4,000,000 was spent in new buildings and commercial and civic development in 1917 in spite of war conditions! They built three public schools, a heating-plant, a handsome new eight-story office-building, two churches, and a Y.W.C.A. building, and all of them have Barrett Specification Roofs.

The public library and telephone-building, and many smaller buildings, likewise have Barrett Specification Roofs. In fact, of the thirty-one business-, industrial-, and municipal-buildings started or completed during the year, twenty-seven have Barrett Specification Roofs or roofs of Barrett materials.

Practically all of these roofs have been constructed by the local contractors, the Mica Insulating Co., inspected by our inspectors, and guaranteed free of repairs for twenty years by *Barrett 20-Year Guaranty Bonds*.

For permanent buildings Barrett Specification Roofs are so much better, so much cheaper per year of service, and offer so much more in fire-protection, that they cover more of such structures than any other kind.

*A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.*

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(At top) Modern Brotherhood of America Bldg., Mason City, Iowa. Roofers, Mica Insulating Co., Mason City, Archs., Bell & Bentley, Minneapolis. Cont., W. S. Kingsley, Faribault, Minn. (Below) Church of Christ, Mason City, Ia. Roofers, Mica Insulating Co., Mason City, Archs., Geo. W. Kramer & Son, New York City. Conts., Wm. O'Neil & Son, Faribault, Minn. (In oval) Mason City High School, Ia. Roofers, Mica Insulating Co., Mason City, Archs., J. H. Felt & Co., Mason City, Cont., H. P. Jones, Mason City. (Bottom at left) Markley-Smith Bldg., Mason City, Iowa. Roofers, Mica Insulating Co., Mason City, Arch., E. Broaten, Mason City. Conts., P. R. Wells & Sons, Mason City. (Bottom in Center) Jefferson School, Mason City, Iowa. Roofers, Mica Insulating Co., Mason City, Arch., E. R. Bogardus, Mason City. Conts., Henkle & Brown, Mason City. (Bottom at right) Y. W. C. A. Bldg., Mason City, Ia. Roofers, Mica Insulating Co., Mason City, Archs., Shattuck & Hussey, Chicago, Ill. Cont., E. L. Stratton, Mason City.





## A Department Devoted to the Use of **AUTOMATIC SPRINKLERS**

Edited  
IRA G. HOAGLAND, Secretary      PAUL MASON, Special Representative  
National Automatic Sprinkler Association

### ***New Detroit Building Code; Its Sprinkler Provision and Occupancy Classifications***

MUCH attention has been given recently to the new Detroit building code, especially in architectural and engineering journals, which generally recognize it as a real advance in legislative enactments for the regulation of building. The American Architect (New York) in the caption to a long editorial analysis, defines it as "An Important Departure in Building Codes." The insurance journals of the country seem not to have recognized its importance so generally, and yet it is bound to have an important effect on insurance conditions in Detroit.

One of the most interesting features of the Code is found in the sections dealing with automatic sprinkler protection, which seem to have been worked out with a great deal of care, but which, nevertheless, include some assumptions which are hardly borne out in practice—which do not stand up well on analysis. For instance—

The table "Safety Value of Construction of Buildings" presents some rather anomalous figures. Assuming that 60 points is the approximate safety value for fireproof (fire resistant) type of construction, if 30 points are allowed for sprinkler protection, making 90 the safety value of a fire resistant sprinklered building, it also assumes that 20 points represent the safety value of a mill constructed building. Adding 30 points for sprinklers, the safety value of a mill constructed sprinklered building is only 50, which doesn't compare well with the fire resistant sprinklered building. The entire table (with sprinkler value added) follows:

|                                    | Safety Points | Total Points |
|------------------------------------|---------------|--------------|
| S1—Fireproof type .....            | 60 + 30 =     | 90           |
| S2—Mill or slow burning type ..... | 20 + 30 =     | 50           |
| S3—Ordinary type .....             | 15 + 30 =     | 45           |
| S4—Frame type .....                | 10 + 30 =     | 40           |
| S5—Skeleton type .....             | 25 + 30 =     | 55           |

#### **Mill Construction Fairly Safe**

A mill constructed building—properly built according to accepted standards—is substantially as safe as a so-called fireproof building. It is not that buildings burn so much as that contents are destroyed; and if both are sprinklered, contents are substantially as safe

in a mill constructed as in a "fireproof" building. If the former is completely sprinklered with standard equipment, contents are safer than in the so-called fireproof building, unsprinklered; and the sprinklers also constitute an added guarantee of the safety of the building from fire—even from a conflagration of magnitude. Witness the buildings saved from destruction in the very midst of the Salem and Atlanta conflagrations, by their sprinklers.

The table also makes the sprinklered skeleton type building safer than a sprinklered mill constructed building, which will not be conceded by any fire prevention engineer, insurance engineer or fire chief in the country. That assumption, at least, falls little short of being ridiculous.

What would seem to be a fair estimate of the safety values of different types of construction (which must be made with respect to the addition of a fixed quantity—the value of sprinkler protection) would raise the safety value of standard sprinkler equipment from 30 to 40, and would produce a table something like this:

|                                       | Safety Points | Total Points |
|---------------------------------------|---------------|--------------|
| S1—Fireproof type .....               | 50 + 40 =     | 90           |
| S2—Mill type .....                    | 40 + 40 =     | 80           |
| S3—Ordinary type .....                | 15 + 40 =     | 55           |
| S4—Frame type .....                   | 10 + 40 =     | 50           |
| S5—Skeleton type .....                | 25 + 40 =     | 65           |
| S6—Complete approved sprinklers ..... | 40            |              |

#### **Further Modification Possible**

It is even likely that modification of S3 and S5 would be advisable, for it is doubtful if there is so much difference as noted in the safety values of the ordinary type and the skeleton type of construction. Probably it would require careful consideration and discussion to balance, counterbalance and differentiate their relative merits and demerits; or much argument to show where advantages and disadvantages of the skeleton type fairly equalize each other. But it would seem sounder judgment that, if ordinary type is to be credited with 15 points, skeleton type should not be credited with more than 20. It might



## Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs, the first cost is the only cost entailed.

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be better still to allow the skeleton type to remain at 25 and raise the ordinary type to 20. Certainly there are 10 points of difference between either of them and the frame type.

"The American Architect," in its issue of July 3, in an extensive analysis of the code, presented a table of safety values that is more acceptable than that provided in the code itself, yet fails to recognize that ultimate safety is the goal sought and not initial or intermediate safety. The editor's estimate of the safety value of sprinklers is 60 points, and his table, with 60 added to each of the respective structural values, is as follows:

|                                       | Safety<br>Points | Total<br>Points |
|---------------------------------------|------------------|-----------------|
| S1—Fireproof type .....               | 30 + 60 =        | 90              |
| S2—Mill type .....                    | 30 + 60 =        | 90              |
| S3—Ordinary type .....                | 15 + 60 =        | 75              |
| S4—Frame type .....                   | 10 + 60 =        | 70              |
| S5—Skeleton type .....                | 25 + 60 =        | 85              |
| S6—Complete standard sprinklers ..... | 60               |                 |

The inconsistencies of this table may be illustrated in this manner: It is doubtful, for instance, if a frame building, unsprinklered, is one-third as safe as a "fireproof" building unsprinklered; and it is even more doubtful that, if both are sprinklered, the frame is seven-ninths as safe as the "fireproof" structure. And is there anyone, conversant with the merits of all types of construction, who will concede that a sprinklered skeleton type building is seventeen-eightieths as safe as a sprinklered "fireproof" building, or even as a sprinklered mill constructed building?

#### Other Points of Interest

The code seems to be a fairly well digested instrument as a whole, and to embody some distinctly new basic ideas in arriving at both general classifications and specific conclusions; but in dealing with other subjects, as well as in the sprinkler sections, it arrives in some cases at results that on careful analysis do not seem as excellent as they appear from cursory reading.

For instance, the system of occupancy classification, generally speaking, is admirable, but in working out the details one produces some curious incongruities, notably in the 15 sq. ft. and 50 sq. ft. classifications. Under "Kind or Use of Buildings," those which are required to have 15 sq. ft. of floor space per person are: Dance halls, lodge rooms, exhibition rooms, skating rinks, printing establishments, armories, convention halls, club houses and bath houses.

This classification means one person to every 4x4 ft. area of floor space, a condition that hardly would obtain in printing establishments, which should be classified with workrooms, requiring 50 sq. ft. per person. Club houses and bath houses might well be classified with hotels at 150 sq. ft. per person.

In the 50 sq. ft. class are found: Work rooms, manufacturing buildings, factory buildings, loft build-

ings, packing houses and office buildings—certainly an incongruous grouping. There is much difference between the floor space requirements of a clothing factory with its sewing machines and the weave room of a cotton or woolen mill. Shoe factory and cigar factory requirements are vastly different, and different parts of either will differ in requirement from other parts.

Unless these classifications are based on a large number of actual surveys made in Detroit, their advisability is at least open to question; and if they are based on such surveys, their value to other communities is problematical. Possibly Detroit has a number of occupancy classes which fall (or seem to fall) within the limits noted in that city, but which may not be duplicated in any other large city. That is to say, local conditions have been permitted to govern in these classes. But there is little doubt that they should be classified in accord with the basic hazard, as generally recognized, rather than in accord with purely local factors. If the conclusions so reached are to be of real value outside of Detroit, certainly they must be so classified.

#### No Woodwork Permitted in the Building

UNDER the direction of Weary and Alford Co., of Chicago, specialists in banking house construction, the Galveston, Texas, building of the City National Bank, is being remodeled. It is estimated the work will be completed by May 1, 1919, and will cost in the neighborhood of \$135,000.

The structure will be fireproof throughout, no wood work being permitted either in its frame or furnishing. Bankers appreciate the need of safeguarding their valuable records from destruction by fire, and the Galveston financiers will take no chances with inflammable wooden trim or equipment.

#### Watch the Chimneys

POOR chimney construction has long been recognized as a prolific source of serious fires, and fire prevention engineers and department chiefs are paying greater attention to the hazard than ever before.

At Ishpeming, Mich., a regular inspection of chimneys, in residences as well as mercantile properties is made, and where defects are found the owner is given a reasonable time in which to effect repairs. If these are not voluntarily made, the work is ordered done by the Fire Department and the bill sent the property-owner. As might be expected, the effect of the campaign, has fully justified its undertaking; the fire record of the city for 1917 showing substantial improvement over that of the previous year.

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LATEST  
EDITION

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New York City, N. Y., July, 1918

Priceless

## How Supply Dealers Should Figure Costs

William T. Rossiter, president of the Ohio Builders Supply Association, has been studying the business practices of supply dealers throughout the Buckeye State, and has rightly concluded that considerable improvement therein could be effected. His comment upon the cost of operating in car load lots is as follows:

What is the actual cost of doing business in car lots not handled on dealers' sidetrack; in other words, what percentage of profit should be charged to goods sold F.O.B. cars? There are many opinions on this subject, and I believe that if all dealers would figure their actual costs and distribute them fairly over all commodities, divided into:

First, F.O.B. car proposition,

Second, delivered from car to job,

Third, called for at warehouse,

Fourth, delivered from warehouse to job.

In taking a typical builder's supply business operating in 1916 I will use the actual figures, dropping the odd dollars and cents both in sales and expenses, which will make it more simple in percentages. I use these figures because it represents a well conducted business, having kept a very good distribution of commodities and costs. One warehouse and yard was operated by this company who also was favored with a good proportion of F.O.B. car business. With a minimum of administrative and selling expense it admits dissection fairly establishing an idea of burden to each of the above mentioned modes of distributing material.

This company had but a trifle over \$30,000 invested in their business. No provision had been made for depreciation, and after five years this party was truly joyful in getting practically his investment

back. In a later article I hope to point out my idea of why this business failed.

To explain the car load price, let us eliminate all but the business amounting to \$18,000, which was sold F.O.B. cars and would not require any portion of the warehouse or teaming, and then take the percentage of cost of selling the administrative to the entire volume of business, \$92,000 costing \$68,000 which would be about 7¼%.

| Example:   |          |                     |          |
|--|----------|---------------------|----------|
| Sales  |          | Profit              |          |
| 1. F. O. B. cars.....                                | \$18,000 | 8 + %               | \$1440   |
| 2. F. O. B. cars delivered to job.....               | 9,000    | 13 + %              | 1170     |
| 3. Called at warehouse.....                          | 17,000   | 20 + %              | 3400     |
| 4. Delivered from stock.....                         | 48,000   | 29 + %              | 14000    |
| Total sales for year.....                            | \$92,000 | Gross 21 + % profit | \$20,010 |
| Expenses   |          |                     |          |
| Warehouse, Rent, Labor and Misc.....                 | \$6,200  |                     |          |
| Teaming, labor, shoeing and rep., feed and misc..... | 5,700    |                     |          |
| Selling, sales, sal. exp., auto exp. and adv.....    | 2,200    |                     |          |
| Admin. off sal.....                                  | 4,600    | Total expense ..... | \$18,700 |
|  |          | Net profit .....    | \$ 1,310 |

His division of profits shows he made 8% which allowed him ¾% profit, and this profit was figured on 15c differential on cement, \$1.00 per ton on plaster, 10c per ton on stone and 10c on sand. (Many dealers are not getting these differentials and they believe they are making money even on the 1918 increased cost of doing business. Bear in mind the above expenses are for 1916.)

Now here is the point I wish to convey. What is the additional cost of selling material delivered from warehouse to that of car load? In other words, if this dealer had passed up the car load business in favor of handled material, would he have been better off? Of the \$4,600 administrative expense the proprietor drew \$1,500, his man who looked after the cars, the cash, kept the books, etc., drew \$1,000. A young lady did the billing, answered the telephones and all that the other two could not attend to, and in order to keep from paying

an income tax received \$660 per year, making a total of \$3,160 salaries out of the \$4,600. Some dealers have often stated that you must take car load business to stay in business, others insist that if it was not for warehouse business they would have to discontinue the use of their office for manufacturers clearing house. I will add that taking the total administrative expense and adding the selling cost of \$2,200 which included one man, an auto, his expense and the advertising, would amount to \$6,800 or would require \$85,000 worth of

material to be sold at 8% just to take care of the two items and allow no profit whatever.

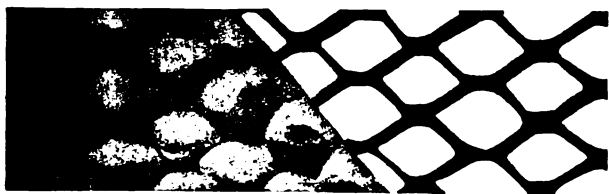
Think this over—figure your own business over and write your secretary, suggesting some solution.

At a later date the entire trial balance and closing entries to this typical business will be worked out, showing the warehouse and delivered proposition. The differential on the various commodities is the foundation on which your business is to succeed or fail. The association has done its part—it's up to you.

It is figured that nearly 95,000,000 barrels of cement were used in 1917.

BUILD IT OF MASONRY  
MATERIALS

## The Fireproofing News



### A Permanent Clinch

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Such a material is found in

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### War Industries Chairman

W. H. Foster, president of the General Fireproofing Company, has been elected chairman of the Youngstown, Ohio, division of the War Industries Commission.

This Commission, which has jurisdiction over the Shenango Valley, in which Sharon, Pennsylvania, is located, and the Mahoning Valley, in which are Youngstown, Niles and Warren, comprises four counties, i.e., Mercer County, Pennsylvania, Mahoning, Trumbull and Columbiana Counties, Ohio. The operation of this Commission, which is organized along what is known as the Cleveland plan, and being extended throughout the country, will have far reaching effect on American manufacturers.

As stated by Mr. Foster in his opening remarks before one hundred representatives of the surrounding industries, the purpose of the organization is to mobilize the industries of the country in order that the Government may be more

efficiently served in the production of war materials and also the object is to assist non-essential manufacturers to change over to an essential or war basis, thus enabling them to continue to keep their plant in operation and maintain organization throughout the period of the war. This plan of organization is being fostered and encouraged by the Government, whose direct representative is Charles A. Otis of Cleveland, Ohio.

Ralph E. DeWitt, has been selected as assistant commissioner of the Associated Metal Lath Manufacturers, and will aid Commissioner Carter in directing the growing work of the organization. He will make headquarters at Cleveland.

The Bridgeton Brick Company, of Bridgeton, N. J., recently incorporated with a capital of \$100,000.

### Hollow Tile Manufacturers on Preferential List

A recent announcement by the War Industries Board at Washington, is to the effect:

A committee representing the principal manufacturers in the United States of hollow tile were accorded a hearing before the priorities commissioner and other representatives of the War Industries Board. The hearing developed the fact that considerable quantities of hollow tile are required in connection with Government construction, a limited amount in expansion by war industries and in the building of silos, etc.

The conclusion was reached that the industry should be accorded preferential treatment to the extent necessary to produce the tile required for the uses mentioned and no more, conditioned upon the producers pledging themselves to sell their product only if devoted to essential uses as that term shall be defined by the Priorities Board.

### Distribution of Unskilled Labor

Federal Employment offices were originally operated in connection with the Immigration Service. Under the United States Employment Service, recently established, they have now been greatly developed, separated from the Immigration Service, and made an important agency of the War Labor Administration. The Employment Service is not a new form of the old agency. It is a new and distinct service which undertakes functions of great importance to all employers and with which they should co-operate during war.

#### Labor Exchanges

After August 1 the United States Employment Service will undertake to be the medium through which employers in the United States obtain their unskilled labor. In other words, from that date the Employment Service will operate its branch offices as labor exchange, —i. e., as instrumentalities for bringing together workers and the employers who need their services.

Such a labor exchange will not be an employment office in the old sense. On the contrary, it will constitute for its community a place where all employers can confidently expect to learn of all the workers available for the exact positions they desire to fill and every worker with equal confidence can expect to learn of all the opportunities for employment that are open to him.

#### Unskilled Labor

In this sense the offices of the United States Employment Service are to be exchanges for unskilled labor. The President's announcement of this undertaking issued on June 18, is printed in the bulletin, together with a letter addressed to the President on June 15 by the Secretary of Labor; this letter sets out the considerations which lead the War Labor Policies Board to recommend to the President that he inaugurate the plan.

#### Advisory Councils

For success labor exchanges obviously must be managed in such a manner, and under such auspices, as to assure their entire impartiality and their operation solely as agencies for co-ordinating supply and demand for labor, with elimination of all possible waste. Assurance of this kind, both for employers

and for workers, is usually sought through supervision by a committee composed equally of representatives of employers and of workers.

The plan of the United States Employment Service contemplates the use of such committees. They are to be called advisory councils. In each of the thirteen districts into which the country is divided by the Employment Service there are to be advisory councils. They will consider questions of policy important to their districts and advise the directors of the Employment Service who are in charge of the districts. Larger questions of policy will be referred to Washington, for decision by the central War Labor Policies Board.

At the end of the bulletin there are printed lists of the directors who are in charge of the thirteen districts and of the four hundred branch offices that are now being operated, or are being opened. Other branch offices will be established as they are needed.

#### Employers Affected

Centralization of recruitment of unskilled labor, to be inaugurated on August 1, will affect establishments employing one hundred or more workers. Establishments employing a smaller force will be free, if they choose, to proceed in their usual manner.

The establishments which come within the plan, too, will be permitted to hire in the ordinary way such workers as present themselves without inducements from the employer. In other words, employer; will be free to engage men who offer themselves at the factory gate without having been solicited directly or indirectly.

#### Operation of Plan

The plan is intended to put an end to the waste and the disorganization which arise from "stealing labor." It is meant to substitute an orderly procedure through which each establishment will be able to supply its needs for unskilled labor in accordance with importance of the work upon which it is engaged. So far as the plan operates to withdraw unskilled labor from industries not directly connected with the war, the withdrawals will be distributed as equitably as possible,

under control from the central War Labor Policies Board.

Priorities for labor will be established only where there is an actual shortage. Such priorities as are given will accord with the priorities determined for fuel, materials, etc., by the War Industries Board.

Other principles that have been determined support the general purpose of the plan. For example, the local supply of labor is to be applied to meet the local demand. Workers will be transported from one community to another only when conditions leave no alternative, and then they will be transported the shortest possible distance.

#### Government's Powers

The plan was proposed by the War Labor Policies Board on the ground of military necessity. It is urged by the President upon employers and workers for their solemn consideration and immediate acceptance. Its usefulness as a method of relief for managers, and as a service to workers who desire employment that is essential during war, is expected to guarantee success. In other words, no obvious form of compulsion is announced, and voluntary acceptance is expected.

At the same time, the plan has the support of the government's agencies which control fuel and materials. This circumstance is counted upon to protect establishments which accept the plan by assuring them that they will be under no disadvantage.

#### Skilled Labor

The proposed monopoly of the Employment Service in distributing unskilled labor does not now extend to skilled labor. For the present, skilled labor may be recruited by all employers as heretofore. At the same time, the offices of the Employment Service will in no wise decrease their services in providing skilled workers.

#### Organization of Common Brick Manufacturers Formed

To stimulate the use of brick and promote the interest of the manufacturers representatives of the leading common brick concerns of the country lately formed an organization called the Common Brick Manufacturer Association of America.



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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
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Bruce E. Loomis, Ins. Eng. Editor  
George H. Stewart, Business Manager  
Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

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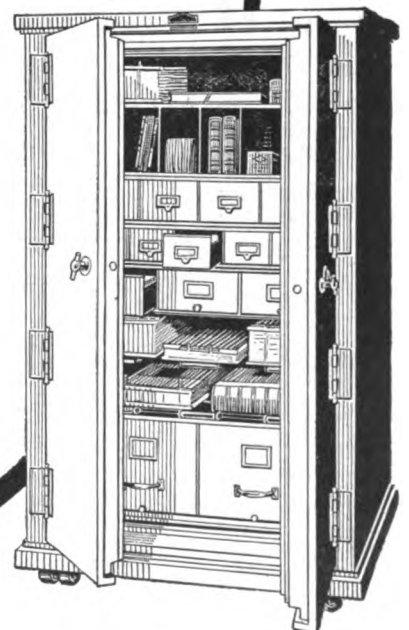
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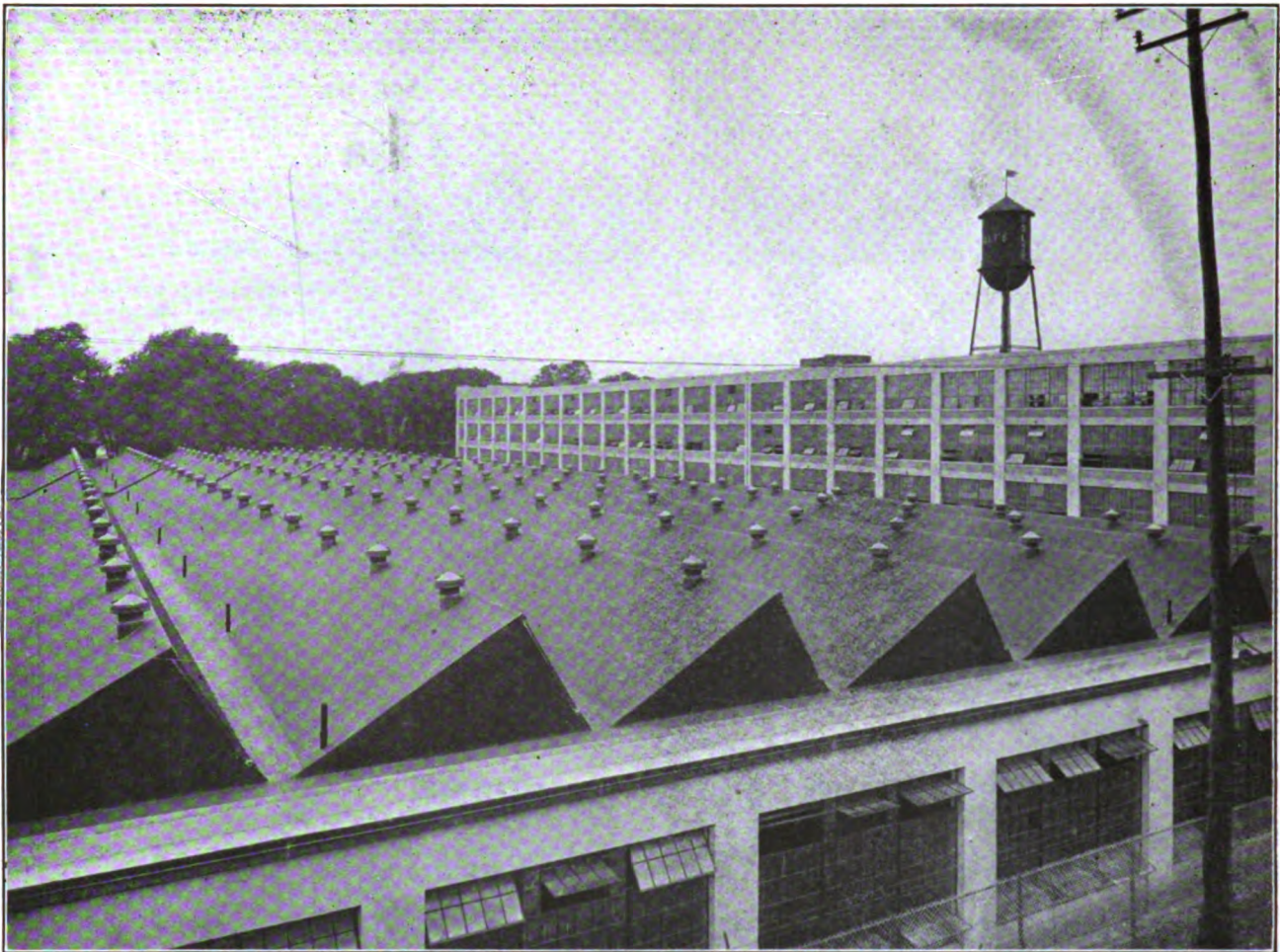
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

VOL. VII

AUGUST, 1918

No. 2

## *Building Industries Federation*

NEVER before was there such a comprehensive gathering of the building industry in all its branches as the meeting held at Atlantic City last month, at which a Federation of the allied interests was organized and a War Service Committee constituted, on initiative of the Chamber of Commerce of the United States, acting on behalf of the War Industries Board. Possibly it was the most comprehensive gathering in the history of any industry; for probably there is no other industry comprising so many diverse branches and affecting so many collateral interests—industrial, trade and professional.

The outstanding feature of the convention was the unanimity with which the representatives of scores of branches of the industry, many of them with national or regional organizations and war service committees of their own, recognized and responded to the call for national service in its broadest sense—its deepest significance. The necessity of the hour was the dominant factor in the proceedings, and the dominant sentiment was "What can I do?" and not "What can I get out of it?" That of itself was a triumph of achievement for an industry—the second largest in the country—that contains more diverse elements and copes with greater diversity of complex problems than any other. It was a triumph of disciplined self-sacrifice to the Nation's weal.

Only one dissonant note was heard in the course of the proceedings. The question had arisen as to the advisability of building labor unions to the proposed Federation, and voices were raised in opposition. Then the representative of the National Brotherhood of Carpenters and Joiners, Mr. Guerrin, made a few remarks that might well have served as the keynote of the convention. After explaining his status by explaining that he was there by invitation, he said:

"So far as the Brotherhood of Carpenters is concerned, we should like to see the employers and the Building Trades Industry thoroughly organized and

we will lend our co-operation to them along these lines. \* \* \* We will be willing to confer with the committees and work jointly for the ends sought by the industry. We are interested in the successful prosecution of the war, and at the same time want to continue the building industry in every shape and form that will not hamper war production. I will stay and vote, or I will retire, whichever is the desire of the convention, without offense or prejudice to the case in any way, and will co-operate with you, in any way possible, at any time, regardless of the action taken."

"Gentlemen," said the chairman, "What can possibly be the answer of business men to a spirit of co-operation expressed on the other side in such a manner?"

Which remark was roundly applauded, as were the sentiments of Mr. Guerrin; from which it may be deduced that the Brotherhood of Carpenters will have adequate part in the activities of the War Service Committee. Mr. Guerrin honored himself and honored his organization by taking the high plane on which he stated the attitude of the Carpenters, and the convention likewise honored itself in its prompt and hearty recognition of his position.

War Service Committee membership is well distributed geographically, with all major sections of the country represented, and equally well distributed industrially. Representation is accorded to the Cement Industry, the Builders' Exchanges, the Southern Pine Association, Plumbing Manufacturers and Dealers, General Contractors, Builders' Supplies Association, Glass Industries, Chamber of Commerce of the United States, Clay Products, and Civil, Electrical and Mechanical Engineers. With such representation as this, the Committee, with its facilities for conference with other federated interests, can hardly fail to exercise an important and beneficial influence in working out the problems affecting all building industries, trades and professions growing out of the war.



### Demand for Fire Protection Engineers

**A**PPRECIATING the vital necessity of protecting industries essential to the prosecution of the war against the ravages of fire, the demand for properly equipped fire protection engineers has exhausted the available supply of such, and technical institutions find themselves unable to respond to the continued call for men. To meet the demand in part the Armour Institute of Technology, of Chicago, as noted elsewhere in these columns, has decided to open special short courses in engineering, and it's a safe assumption that all of its graduates will readily find positions.

Working under high pressure concerns manufacturing war materials are in constant dread of fire, the occurrence of which at this time would seriously hamper the activities of the Government and its allies. It is appreciated that the proper safeguarding of plants against the fire hazard calls for special knowledge: particularly under the abnormal conditions that now exist and which are likely to obtain for some years, hence the demand for trained engineers.

Architects should appreciate the trend of affairs in building construction and equipment and inform themselves regarding the fire hazard and the best means of circumventing it if they are to render the maximum of service to their clients.

Further: the profession of fire protection engineering offers an ever broadening field for ambitious young men, promising as it does not alone substantial financial returns but worth while work to the country as well.

### Fire Losses at Hartford, Conn.

**I**N the fiscal year ended April 1, 1918, the fire losses of Hartford, Conn., amounted to \$256,697. Under the direction of the Fire Department a constant system of building inspection is maintained, with the result that the fire menace is constantly being improved, though it will exist to a considerable degree so long as the frame structures of the city built in the early days continue to stand.

### Reject Non-Fireproof Building Proposition

**V**ERY sensibly the Board of Education of New York City rejected the proposition of a local contractor to erect a series of public school buildings of a non-fireproof character, and rent them to the city at a given figure.

If there is a class of buildings that should be constructed to resist fire to the fullest possible degree it is school houses, and the suggested erection of structures in which this hazard is not seriously taken into account is a sad commentary upon the intelligence of those advancing the idea.

### Concrete Grain Tanks

**R**EINFORCED concrete grain elevators are rapidly replacing the wooden structures formerly used in such connection, and in all likelihood the remaining wooden elevators will either burn or be torn down within a few years. And with their passing has come a reduction in the number and seriousness of elevator fires. At a time when the conservation of grain is of the utmost importance to this country and its allies, the need for erecting elevators that are at once sanitary and fire resistive is appreciated such as it has never been before, and has stimulated the use of concrete in such connection.

"It has been found," according to "Concrete in Architecture and Engineering," "that, concrete drier buildings, bleachers, and working houses in connection with concrete grain elevators are entirely satisfactory, and eliminate much of the trouble experienced in other types.

"Concrete tanks are rat proof and vermin proof, and the fire risk which is always present in every grain elevator, due to the prevalence of grain dust is reduced to a minimum in this kind of structure, for even if the grain dust should ignite and the flames spread rapidly through the building they find nothing to support combustion beyond the dust itself. Numerous examples are to be found where fires of great intensity in direct contact with concrete grain elevator tanks have failed to injure either the tank or contents."

### Fire Protection Engineering

**T**O meet the unusual call for insurance engineers, the Armour Institute of Technology of Chicago, has added two special courses in Fire Protection Engineering, beginning with the new school year on September 8th next. One course will be short; the other continuing through the school year. "The courses will include lecture and class-room work and experimental work at the plant of the Underwriters' Laboratories. The longer course will include also a series of field inspections and special discussion of report writing. All classes will be conducted under the supervision of the head of the Department of Fire Protection Engineering and all instruction will be given by regular faculty members."

The fire loss in the State of Minnesota during June last aggregated \$225,451, as against \$713,352 reported for the same period of 1917. That this desirable result is attributable in large measure to the activity of the State Fire Marshal's Department is easily believable.



## ***Conflagration Hazard of American Cities***

### ***New York's Menace and Suggestions for Its Elimination Serve as Exemplar for All Other Municipalities—Personal Responsibility of the Building Owner or Manager***

By CAPT. PAUL MASON, Fire Control Publicist, New York and Cincinnati

**T**HE conflagration hazard of a city is its most serious menace. It is the sum of all its common and special hazards, plus exposure, accentuated by wind and weather favorable to spread of fire when one develops, and increases virtually in geometric ratio, inversely to the weakness of the fire defense system.

Every community has its conflagration hazard, whether it be metropolitan municipality or rural hamlet. Even the farm, with three or four or half a dozen buildings set close together, has its conflagration hazard, differing somewhat in degree, but not in kind, from that of the "red blocks" portrayed on the Sanborn map of every large city in the country.

The ideal condition, in which, structurally speaking, there would be no conflagration hazard, would require city blocks of moderate size, separated by wide streets, well paved and without overhead wires; the blocks bisected each way by well paved alleys of sufficient width that fire in any building could be fought from front and rear; buildings of incombustible material with fire-resistant roofing; all windows of wire glass in metal frames and sash, with fire shutters if necessary; all door openings closed either by standard fire doors or rolling steel shutters outside ordinary doors of good construction; each building a self-contained fire defense unit with all necessary cutoffs and fire-retardant enclosures, automatic sprinklers, standpipe and hose, chemical extinguishers, etc., and with competent watch service with portable time clock or reporting to central station; or, better yet, with standard automatic fire alarm rendering supervisory service.

These would be the ideal conditions, under which a conflagration would be all but impossible, and the conflagration hazard, as an active potential of disaster, would be non-existent.

#### **The Ideal Not Attainable**

But American cities were not built that way. For the most part, like Topsy, they "jest grewed." It was some time after its founding that New York, in 1648, established a fire police to see that fires were extinguished in the fire places of its wooden chimneys each night and that thatched roofs were reasonably safeguarded; but it was not until 1657 that thatched roofs were abolished by law, and more than 250 years elapsed before the metropolis enacted its "zoning"

law, which is barely beginning to segregate certain elements of its conflagration hazard.

Every city has its accumulation of old hazards, a heritage of decades or centuries of ignorance, carelessness and wilful violation of the law, too often with the connivance of officials. Laws cannot be made retroactive, so such remedy as may be possible is corrective, perhaps only palliative, and cannot be preventive (or truly curative) except for the future, with respect to new construction. Nevertheless, the conflagration hazard is here, and must needs be studied from every angle, to the end that it be minimized where it cannot be eliminated, and nullified to the greatest possible extent by the enforcement of good housekeeping; compulsory installation of fire retardant appliances and fire fighting equipment and their maintenance to the highest possible degree of efficiency; such structural changes as will provide maximum possible safeguards at cost not so great as to be confiscatory, and compulsory demolition of buildings that cannot, at reasonable expense, be made anything else than firetraps—conflagration breeders.

#### **New York Considers Its Hazard**

These are some of the general points for all municipalities to consider. As pointed out before, the conflagration hazard differs in degree rather than in kind. All the phases of conflagration hazard that may be found in any other city certainly are to be found in New York—and probably to greater degree. Because New York has ceased to be merely a Metropolis, and has become a disease, it is quite possible that there are phases of New York's conflagration hazard that are not manifested elsewhere.

Therefore it is exceedingly well that New York is giving attention to its conflagration hazard, even though the manner of its giving attention is not all that it should be. Some of the problems with which the Metropolis is struggling for a solution undoubtedly will be of interest in other cities, as well as here.

Logically enough, the subject has been taken up by the Committee on Risks and Insurance of the Mayor's Committee on National Defense, which held an interesting meeting, recently, to consider a report on "the effect of the war on the fire hazard of the country and particularly as to its effect in this city"; but it would seem to a thoughtful observer that the committee was maladroit in giving out, or permitting

to be given out, anything except the most general of generalities with respect to the magnitude of the local hazard and particularly in adding the specific instances of hazard listed. It is proper to cite specific instances or types of hazard from widely scattered communities throughout the country; but to give in detail, as the committee did, the magnitude of the hazard in Greater New York, to specify many instances of extreme hazard and their nature, to emphasize the weakness of the fire defensive system and to couple this indictment with the specific information that this port exports 80 per cent of the American men and supplies sent to the battlefields of Europe, constitutes a dangerous trenchment on the Federal inhibition against giving aid and comfort to the enemy.

#### **Pertinent for Discussion**

In effect, if not in intent, the committee narrowly sidestepped treason in thus emphasizing the vulnerability of New York to fire attack. However, "the fat is in the fire," and it is therefore permissible to discuss the remedies for this condition, the means whereby these hazards may be reduced or eliminated. More, it is an imperative duty to do so, and even more of a duty to eliminate them.

Specific as the committee was in outlining the fire danger, in emphasizing the hazard by specific example, by indicating the weakness of the fire defense and by pointing out the vital importance of a safe New York in the World War, it dealt only with generalities when it came to the remedies; it merely nibbled at the skin of the apple instead of taking a knife and cutting down to the wormy core.

The way to eliminate is to eliminate, and no committee appointed "to consider" anything, or to "take up with" the government any question, or to "formulate plans" for any line of action will be able to make New York one whit safer, or make it one bit more certain that New York will have enough coal next winter—every day—for each day's domestic, industrial and fire protection needs.

It isn't necessary to recapitulate the hazards, all of which are known to the thinking men of the city, and any one of which, starting a fire anywhere, under conditions favorable to its spread, may propagate to the greatest conflagration the world has ever seen. For the worst hazard in New York is the conflagration hazard, which is potential in every individual hazard, and in all of them collectively. A fire hazard is like a moist snowball rolling down hill. Once the sleeping fire is awakened, it attaches to itself (makes operative) other hazards, grows by that on which it feeds and if not checked early in its progress, becomes a conflagration.

No conflagration has ever been extinguished by

human effort. It either has burned itself out, has been extinguished by torrential downpour of rain, or by shift of wind has been turned back across its own path and died of inanition.

#### **What a Conflagration Would Do**

A conflagration of first magnitude in New York, which has the greatest concentration of values of any city in the world, might be stupendous enough to wreck all fire insurance companies, shatter national credit, upset the money market, minimize security values, waterlog flotation of future Liberty Loans, and in general impair the economic integrity of the nation at a time when such a shock would be apoplectic in its effect. If it spread from what is generally regarded as a conflagration of first magnitude (such as Baltimore with \$100,000,000 loss up to San Francisco, \$375,000,000) to the possible upper limit in Manhattan—say five billions of dollars—it probably would mean a German victory on the fields of France.

What, then, is to be done in order that the sleeping fires may not awaken to become a roaring giant of cataclysmic potential?

The remedies for existing conditions fall within several categories. They may be classified, roughly, as requiring activities in the following fields:

- Fire
- Police
- Administrative—Judicial
- Civic
- Industrial
- Insurance
- Educational
- Personal responsibility.

#### **Some Things to Be Done Now**

This is an emergency, and in emergencies it is not well to go too much into detail. Therefore, remedies for immediate consideration—of vital importance now—are few in number. They may be summarized as follows:

- 1—Increase Fire Fighting force and salaries of rank and file 5 per cent in addition to increase recently voted.
- 2—Make appropriation for such increase of apparatus and supplies as may be needed.
- 3—Re-establish organizations of volunteer Fire Departments in outlying Districts.
- 4—Strengthen the city's share in the protection of docks, wharves and shipping; enforce existing regulations governing handling, storage and transportation of combustibles, inflammables and explosives and make them more drastic if necessary.
- 5—Increase number of fireboats by at least two,

suggesting that the new boats be very swift, shallow-draft, gasoline-driven.

6—Enforce the law of personal responsibility as found in the "Common Nuisances" acts and ordinances, against accumulations of rubbish and other forms of fire carelessness. This is properly a police function, and its operation by the police will conserve the fire-fighting force of the fire department as well as remove conditions by which fires breed.

7—Require an occupancy license for all mercantile and industrial buildings. This will automatically regulate hazardous materials, products and processes in such buildings.

8—City authorities and underwriters' organizations should establish closer co-operation in urging and where possible requiring the immediate installation of fire-retarding devices and fire-protection equipment (fire pails, chemical extinguishers, automatic sprinklers and alarm systems, etc.,) to the end that the larger and more important buildings shall be self-contained protection units. Proper maintenance of such appliances must be assured, and employes must be properly disciplined in handling them.

9—Establish at once the following facts:

How much coal will New York need daily next winter for domestic, industrial and fire protection purposes?

Will it receive such daily supply?

If not, why not?

Last winter's acute conflagration menace was largely due to fuel shortage.

10—Establish closer co-operation between Bureau of Investigation of the New York Fire Department and the Arson Committee of the National Board for the stamping out of arson. Many local firebugs have operated or are operating in other states. Records of suspects should be exchanged with all state fire marshals.

11—Begin at once the education of public officials as to the necessity of exercising the powers they already have for control of the fire menace, and demand their exercise. This will do more to educate the public in habits of fire carefulness than anything else; but should be supplemented by such general fire prevention education of the public as may be possible, particularly of children in the public schools.

#### **Analyzing the Problem**

The first three reflect the depleted condition of the Fire Department, which has lost more than 400 men by draft and more than 250 by retirement and resignation; which has not enough apparatus for the protection of the greater city, and whose men below officer rank are inadequately paid. Special Deputy Commissioner Eli Joseph and Deputy Chief George J. Kuss are working out the problem involved in the

shortage of men, along practical lines, by rehabilitation of the volunteers in outlying districts, as recommended in No. 3, but the other two are directly up to the city—and they must be done, as soon as possible.

No. 4 is being looked after, in its various ramifications, by Federal and city governments, by the Bureau of Explosives and by the New York Board of Fire Underwriters. In the main, the work is fairly well done; but it is not complete, effort is not closely enough co-ordinated, and the result is that some things "get by." If the lines of attack are "closed up," probably more drastic regulations will not be necessary; but if they are, they should be provided—at once.

At least two swift, shallow-draft, high-powered gasoline fireboats should be added to the fire fleet. It has been suggested that the cities on the Jersey side of the harbor be compelled (presumably by the Federal government) to provide this form of protection; but economically, industrially, commercially and defensively the Jersey sectors of the port are as much a part of it as is Manhattan, and both Manhattan and Brooklyn need boats of this type. The fighting of the Dow Stores fire, last fall, would have made a different story if two such boats had been in service. There is a general tendency, among waterfront cities, to instal boats of this type. They get into action in less time and do not consume fuel when not in operation.

#### **Elimination of Rubbish**

Fire Prevention is the sum of all precautions in small things; and the smallest of these is rubbish, which starts with a little dust swept into a dark corner. It is covered with a little waste paper or excelsior, and this, being bulky, light and apt to become scattered, is held down by an empty packing box. The box is handy to drop oily rags in, or more waste paper, excelsior and dust. Then, if spontaneous combustion does not develop, some one drops a match or throws in a cigarette butt. That is the end of the rubbish; it usually means the end of the building also, and sometimes means the end of the business and the end of one or more lives.

Let the police handle it under the law of Common Nuisances. Firemen can be better employed than in hunting rubbish piles, either before or after fire starts.

In Cincinnati, before a system of inspections was inaugurated that eliminated rubbish heaps, more than 25 per cent of all fires originated in cellars, basements or attics. After rubbish was eliminated there were not enough fires in these localities to provide proper training in fighting them for new members of the department.

No. 7 requires no elaboration. Rigid enforcement of an adequately drawn occupancy license law will solve many problems now insoluble by building, fire



and police departments and add materially to the safety of the city. It is the next logical step after the "zoning" law now so effectively enforced and so satisfactory in its operation.

#### **Maintenance of Equipment**

No. 8 states a self-evident proposition. Installation and proper maintenance of fire control appliances are always a necessity in large buildings or buildings where there is concentration of values. The Federal government is compelling the installation of automatic sprinklers and other protection equipment where large war contracts are being executed, as well as adequate protection for records, plans and formulae in such plants. The latter are the heart and brains of the business, and too little attention is given to their protection. The city should do the same thing for its own protection—now and hereafter—and in the case of New York, so vital an outlet for American output of men and munitions to Europe, if the city does not, it is within the bounds of possibility that the Federal government will. Once installed, proper maintenance in the highest potential of effective operation and the training and discipline of employes in effective handling are imperative in their necessity.

The fuel situation is more intimately involved in the city's fire safety than any other one factor. Last winter lack of fuel led Chief Kenlon to declare:

"I have always said that I did not fear, under ordinary conditions, a conflagration in New York City, and I say it again; but if the streets were piled full of snow and we could not move apparatus rapidly, and sprinkler equipments were frozen to the extent that they have been, then I would withdraw that assertion and say that the probability of a conflagration does exist."

Chief Kenlon predicated the hazard on (1) breaking down of sprinkler systems by freezing and (2) inability of the fire department to mobilize promptly, thereby indicating fire department faith in and dependence on automatic sprinklers.

#### **Fuel Famine Increases Hazard**

Moreover, besides impairing the efficiency of protection, the fuel famine increased both volume and kinds of hazard. All kinds of heating appliances were pressed into service. Oil stoves were used at full wick-power by hundreds who never before had seen an oil stove. Furnaces built for coal were crammed with wood, whose flames climbed high in flues that were constructed to resist heat only and not flame. Fires were built in barrels and buckets and tubs and on basement floors. Another winter will bring the same conditions. Therefore it is up to New York to demand answers to the three questions listed under No. 9, and demand them now. An antagonistic Congress and Administration are perfectly willing to milk

New York dry when financial support is needed. They should be shown that if New York is to furnish adequate financial support it must have adequate economic means; and just now this means coal. All the pamphlets and statistics that Dr. Garfield can issue will not turn a war wheel in New York or keep one sprinkler system from freezing. It will require coal—so many thousand tons daily, furnishing so many calories, or B. T. U., per pound. Is New York to be provided with it? If not, why not?

And if not, the people not only suffer, but the government machinery stops, so far as New York is concerned. The fuel problem can be solved only by making the administration come to a realization of this fact.

#### **No Increase in Incendiarism**

Notwithstanding the opinion of the Committee on Risks and Insurance that there is an alarming increase in incendiarism—the tendency on the part of owners to sell out unsalable stocks to the insurance companies—it can be stated with certainty that there is not only no increase in incendiarism, but there is a marked decrease, not only relative, but actual. This applies specifically to the number of incendiary fires. It must be conceded, however, that a number of these fires have resulted in large losses, so that the loss showing is not as favorable as the showing in number of fires. But even this, in view of the large increase in volume of losses from all causes, shows relative improvement as compared with former years.

Nevertheless, arson is a factor in the city's safety, and must be considered. The suggestion outlined in No. 10, if carried into effect, will go far to solve the problem. It might be amplified with the further thought that the Bureau of Investigation, all the State Fire Marshals, and all other agencies, having to do with the suppression of arson and incendiarism, should maintain card index systems covering the records of all persons convicted of these crimes, no matter where the conviction may be obtained or where the crime may have been committed.

Education in Fire Control is an essential thing. It should be taught in the schools, and taught in the most effective manner, supplementing regular instruction from textbooks with frequent lectures and addresses by uniformed firemen—preferably officers; for the boys and girls of today are the men and women of tomorrow, and if they are trained in habits of fire carefulness now, they will enforce fire control later. The newspapers should handle it as all other matters of importance are handled; the public health, for instance. The news of fire control should have constant place, and established facts concerning the nature, method of operation and effectiveness of all kinds of devices and appliances for the alarm, extinguishment and segregation of fire should be treated

in carefully written and illustrated articles from time to time, regardless of the advertising value of such a "write-up" to the maker or purveyor of the device.

#### **Law Enforcement Best Education**

There should be—as there is—education through various associations and committees and other organizations—such as the National Fire Protection Association, the Fire Marshals' Association of North America, the International Association of Fire Engineers, the National Board, the various state fire prevention associations. All these are doing splendid work, and there should be more of it, and of them.

But the best education comes through law enforcement. The rigid application of every safety clause in every statute or ordinance governing New York will do more to make for public education with respect to fire safety than anything else. To that end city and borough officials must be made to realize the full extent of the powers they already have, and compelled to exercise them to the limit. This will be education from the top downward—the most effective of all education. And after all, what is education—in fire control as in all else?

"Educo"—a drawing out, whereby the mind of the pupil unfolds and achieves its own development. It must be one higher up who can do this drawing out, and so incite development. The officials of the city are the logical educators in fire control. Their powers are ample. Let them be exercised to the fullest extent, and the public mind will unfold with respect to fire control to an extent that will assure the fire safety of the World's Metropolis.

Then—and not until then—it will not be necessary for an official committee to (a) emphasize the importance of Greater New York as a factor in winning the World War and (b) point out to the enemy the vulnerability of the city to fire attack in order to stir the public conscience with respect to the hazard and the means and methods by which safety is to be achieved.

#### **Lessons Apply in Other Cities**

These are the general phases of the New York situation and its correctives. Their lessons apply with varying force to other municipalities; for similar conditions exist in them in varying degree. There are special lessons in them, however, for the architect, builder and contractor, who from the structural standpoint are the educators of the public and its guardians with respect to safety of buildings from fire.

They must impress on their clients the necessity of fire resistant construction, with liberal use of hollow tile, the various gypsum products, asbestos building lumber and roofing, stucco on metal lath, etc., wherever these products can be properly used. Incombustible roofing should be the subject of constant

propaganda, for the wood-shingle roof fire is like the poor, in that it is "always with us." They should impress the necessity of protection against exposure by closing all exterior openings with safeguards appropriate to the need—wire-glass windows in metal sash and frames, fire doors, fire shutters and rolling steel shutters where necessary.

Adequate fire stops should be insisted upon—fire walls to minimize areas subject to one fire—and emphasis should be laid on the danger of cutting openings in fire walls, even if standard fire door closure is provided. Even two fire doors, one on each side of the opening, are not as good as the unbroken wall. Stair wells and elevator shafts should be enclosed with fire retardants, and all belt and shaft openings, etc., should be adequately protected. All floors in large buildings should be scuppered, and goods and materials skidded at least six inches off the floor.

#### **More Than Good Construction Needed**

These are the structural safeguards that are essential to the well-being of every city; but they can only minimize the effect of fires in contents, and will not prevent or control them. Fire-fighting appliances are essential, and their installation and maintenance are a part of the personal responsibility of the building or plant owner, occupant or manager. It is a responsibility that cannot be delegated and includes the life safety of personnel as well as the safeguarding of values involved.

Water barrels and buckets, pails of sand, chemical extinguishers of soda-and-acid and carbon tetrachloride type, standpipe and hose, yard hydrants and roof monitors, automatic sprinklers and alarm system, watchman service (with a real watchman instead of a human derelict) with portable clock or automatic alarm under supervisory service—all these are essential to the fire safety of every important building, and if they are properly installed and properly maintained at the highest potential of operating efficiency every such installation will constitute a material factor in the reduction of the conflagration hazard in the city of its location.

#### **Building Column Tests**

**F**IRE tests of loaded building columns—the most expensive and elaborate experimental work ever undertaken by the Underwriters' Laboratories of Chicago—are proceeding according to program: 77 out of a total of nearly 100 columns having already been tested. Some of the tests, running for periods of eight hours, have been witnessed by prominent engineers from various sections of the country, and have yielded valuable information. When the work is completed the results will be carefully analyzed and presented in printed form.

## *Life and Fire Hazards of Electricity*

**A**T a recent meeting of the Electric Club-Jovian League of Chicago, the speaker was Dana Pierce, vice-president and electrical engineer, Underwriters' Laboratories, who gave a talk on "Present-Day Electrical Tendencies." The subject matter of Mr. Pierce's address concerned the use and safeguarding of electricity in home and factory, more particularly as viewed by the Laboratories.

Stress was laid by the speaker upon the prevention of accidents and the improvement of safety methods in the electrical field. Public opinion has changed in recent years. Inertia is giving place to action and interest. Criticism is less destructive and more constructive than formerly. The public is waking up to the benefits of co-operation. The safety-first movement is one conspicuous example of this, a movement as yet in its infancy, but one that has already been successful because of the interest accorded the cause by the public.

The trend of electrical tendencies in home and factory, Mr. Pierce pointed out, has assumed two phases: one is that of grounding, the other of inclosing live parts. He pointed out how for many years the question of whether to insulate or ground fixtures had been a debated one, but there has been a gradual veering of opinion toward earthing these fixtures. He pointed out that the National Electrical Safety Code, issued by the Bureau of Standards, is the standard at present and advised everyone to familiarize himself with it.

The difficulty of grounding portable fixtures, such as lamps, irons and hair curlers, was touched upon, and it was pointed out that there is opportunity along this line for inventive genius to come into play in the development of improved fittings, methods of grounding, and protecting apparatus from abuse.

The second factor was inclosing of electrical apparatus. There is a rapid and wide movement toward enclosing current-carrying parts. Only those that have tried to enclose these parts appreciate the difficulties of doing it when considering such matters as permitting inspection, supervision and operation, clearance and the dissipation of heat. For large companies this question is a pressing one and extremely complicated, and how far to go, whether to make the enclosed parts entirely inaccessible, or how much so, is not easily solved. It cannot be too strongly emphasized that enclosures should be grounded permanently.

The problem of extensions of circuits is an important one. New tenants and others make extensions in factory and home that are never known by insurance interests and city inspectors and in ways that

defy all rules and regulations. Flexible silk and cotton-covered cords are strung along nails, underneath carpets and through holes in walls to lamps and machines without any regard to safety. These may remain for months and years until the structure burns down or there is a fire or a fuse blown. This promiscuous wiring and making of extensions by unrestrained and inexcusable use of flexible cord, defying all codes, is a menace. Here, too, there is a need for some invention that will remove this hazard by making available some form of wiring that can be done cheaply and safely and yet does not impose a danger.

The Laboratories' staff has endeavored never to make rules that will hamper or restrict the use of electricity because it believes the safest method of transmitting energy is electric. An electric range is safer than a gasoline range; an electric lamp is safer than a kerosene lamp; an electric motor is safer than a steam engine, and so on. But energy is energy; heat is heat, whether made electrically or not, and it is failure to appreciate this fact that is responsible for many electrical fires. Few people realize what has been the result of this failure. During recent years reliable statistics of fires caused by electricity have been obtained by the Actuarial Bureau of the National Board of Fire Underwriters.

The statistics are surprising as shown by the following figures which are for the year 1916 only. The total fire loss for this year as given by their figures which represent more than 97 per cent of the fires in 1916 aggregate \$208,705,340.

The chief items from this 1916 tabulation are shown in the list below.

| Credited Cause of Fire              | Loss         |
|-------------------------------------|--------------|
| Exposure .....                      | \$41,237,168 |
| Electricity .....                   | 16,559,433   |
| Defective chimneys .....            | 12,724,317   |
| Stoves, furnaces, boilers, etc..... | 11,204,875   |
| Spontaneous combustion .....        | 10,949,266   |
| Smoking cigarettes, etc.....        | 8,588,375    |
| Lightning .....                     | 8,092,622    |
| Incendiarism .....                  | 8,121,816    |
| Sparks .....                        | 7,413,348    |
| Petroleum and products.....         | 5,070,100    |
| Total .....                         | \$29,961,320 |

Of the enormous total loss due to fires of \$29,961,320 annually, the second largest fire losses are paid for fires caused by electricity, a cause classed by the Bureau as "Partly Preventable."

This is surprising, because electricity is so safe, the



safest form of energy there is. It is not electricity that is responsible or is to blame; it is carelessness. The cause is because people fail to realize that heat is heat.

The many small current-consuming devices, hair curlers, flat irons, hot plates, plate warmers, and so on, are largely responsible. There are 100 fires daily from these causes—fires that often do not necessitate calling out the fire department but nevertheless require settlement by the insurance interests. These fires are of individually small loss, but in the aggregate the loss is a large one.

Fire is the Germans' silent ally. The fire loss in the United States is seven and eight times what it is in countries like Great Britain and France. And these fires are largely due to gross carelessness, criminal inexcusable carelessness, hence largely preventable.

If there is to be improvement it will be necessary for the public to exercise more care. They must realize the situation and be made to understand that it is they that are directly responsible. The public must be enlightened on the use of electricity in the home and in the factory, and made to grasp the fact that the hazard is due to them, not to the devices.

Electricity needs to be safer. Some improvement can be made in methods of use, but the greatest improvement must come from the people, who must be taught to use common sense and care. This is a matter of education.

#### •Responsibility of Architects for Fire Prevention

**I**N the opinion of Robert D. Kohn, of New York City, chairman of the Fire Prevention Committee of the American Institute of Architects, and himself one of the best known men in the architectural profession: "The architect is above all others, responsible for the prevention of fires," and should be made to appreciate that fact.

Outlining the method employed by the committee of which Mr. Kohn is chairman to acquaint members of the American Institute of Architects with important fires and the lessons to be learned therefrom, it was stated that:

"After every fire in New York or Brooklyn, the New York chapter receives a written report from the local underwriters, and when these reports are of such a nature that faulty building construction is indicated as the cause of such fires, then the New York chapter has those reports re-printed and sent to every member of the New York State chapter of architects. They have also a joint committee which meets with the representatives of the engineers and underwriters, and they discuss matters bearing on fire prevention and endeavor to influence legislation

of a proper sort. It has come about that they have a great deal of influence in New York and have succeeded in controlling and influencing the making of certain laws that have worked very satisfactorily. In Chicago there has also been a work conducted by a committee of the architects, whose duty it is to watch the work of the Underwriters' Laboratories, to be present at some of their experiments and to report such tests and experiments as may be of most interest to the architects throughout the country. This committee has during the last year, sent out two reports, and has also taken upon itself the burden of trying to make the architect realize that he, above all others, is responsible for the prevention of fires. In these reports this committee has tried to place that responsibility just as firmly and strongly as it could. Reports of tests made on building materials are given and appeals made to the architects to utilize the better materials and utilize the benefits which the laboratories have secured for them by determining which are the better materials and constructions to use in certain industries. Now this committee has this in mind about the architects; it takes a sort of fatherly attitude towards them because the committee are architects themselves and they feel that the architects of the country need a hard stirring up; they must be made to realize the indifferent attitude of the architect who, in a community outside of a big city, usually puts in only such fire prevention measures and makes his buildings only so fireproof as may be required by the laws of his particular locality. It may be just enough to get a decent rate of insurance. What this committee is trying to do is to make the architect take the lead and see to it, first of all, that the occupants of the building have a safe exit and that he will introduce as many fire resistant and fire prevention methods and materials as the owner in every case will permit."

#### Largest Sheep Shed Built of Concrete

**W**HAT is claimed to be the largest sheep shed in the world is that built by the Denver (Colo.) Union Stock Yards last year. The structure, which is wholly of reinforced concrete, is 422 by 320 feet, double deck and has a floor area of over eight acres. The concrete floors are sloped slightly so that they can be quickly and thoroughly flushed. Both the sanitary and fire safe qualities of concrete were factors that influenced the owners of the property to the present type of construction.

Of the 16,613 registered architects in the country 8.54 per cent. filed income tax returns in 1916, attesting thereby that they were in receipt of net incomes in excess of \$3,000.

*A Department Devoted to the Use of*  
**AUTOMATIC SPRINKLERS**

IRA G. HOAGLAND, Secretary  
 National Automatic Sprinkler Association

*Edited*

PAUL MASON, Special Representative

## *Installation of Private Fire Protection Systems Essential to City's Safety*

**I**NSTALLATION of all necessary fire appliances—water pails and barrels, fire extinguishers, stand-pipe and hose systems, automatic sprinklers, automatic alarm system, etc.—for the protection of individual plants from fire is a vital necessity; but it is only a beginning. If these appliances are installed primarily as money savers in the cost of indemnity, rather than for the protection they afford, and are not maintained constantly at the highest potential of efficiency, they might about as well be not installed.

This also is true of the passive as well as of the active protection agencies—such things as fire doors, wire glass windows in metal sash, shields for belt and pulley openings, elevator and stairwell enclosures, etc. Even a light insulated safe for either temporary or permanent safeguarding of records should be looked after from time to time to see that it is not deteriorating through neglect.

Installation of fire control equipment should be for sake of the protection afforded. Protection is assured only if maintenance is perfect; but if maintenance is effective, protection is both immediate and continuing, and being continuous, is cumulative in its beneficial effect.

### **What Production Does**

In the first place, it protects the plant against direct loss due to destruction by fire, or minimizes loss if fire occurs, and protects the lives of the workers. The life hazard, in many establishments, is greater than the menace to property.

Second, it assures stability of business by preventing interruption of operation by fire. Contingent losses incident to interruption of business by fire usually are estimated as fully equal to the direct losses; in many instances they exceed the direct losses many times. This is particularly true where (and when) a concern is put out of business as the result of fire.

A striking example of this result was seen about two years ago in a second-size Indiana city, where an iron works burned. The management had refused

repeatedly to instal adequate protection, and even had "turned down" a very favorable proposal to sprinkler the plant on the plan of payment from savings on insurance.

### **Distribution of the Loss**

The plant burned—a total loss. Insurance was insufficient to rehabilitate the business and the owners were not strong enough, financially, to obtain needed capital. So the enterprise was abandoned. The loss figures something like this:

On the plant, upward of \$250,000.

To the owners, a life-time business.

To the 800 employees, all employment.

To many of them, abandonment of homes, wholly or partly paid for.

To many more of them, entire or partial exhaustion of savings while seeking new employment, largely at a distance.

To the city, taxes on the property and the properties of officials and employees; revenue to water department.

To public service companies, electric and gas service revenue, payments to traction and street car companies, etc.

To merchants, patronage of 4,000 people, dependent on the industry.

To banks, deposits of a large number of employees, mostly in savings accounts, and current banking business of the company, besides increased banking transactions of all concerns dealing with or catering to the needs of the industry or its employees.

The list might be extended materially; but the vital fact about it is that with hardly more than one exception, these losses are continuing, and will continue. In the last analysis, it is doubtful if there is even one loss in the list that is not continuing. The visible effect of the loss may have disappeared, like the ripple caused by a stone cast into the sea, but the effect is

still there, and must widen, even though it becomes less intense, as time goes on.

#### **All Buildings Need Protection**

Chief Kenlon, at a recent meeting of the Committee on Risks and Insurance of the Mayor's Committee on National Defense, said he wished every business, loft and factory building in Manhattan were sprinklered. His mind was sweeping over the salient facts concerning the New York Fire Department—too few men, and most of them underpaid; too little apparatus, and manufacturers unable to get priority orders for materials and supplies to produce what the city needs; too few fireboats, and the best of those needing repair; another fuel famine imminent, and winter coming soon to add to the effect of each of these other handicaps. He visualized the condition that arose last winter, when he was moved to declare, after a survey of all the circumstances, that a conflagration was not only possible, but probable.

So, under conditions such as these, it is "up to" the individual building and plant owner or manager to instal all needed equipment and appliances for the control of fire—from alarm to extinguishment—and other devices for its segregation at the point of origin. This is an element of personal responsibility that is the crux of the fire defense situation; a responsibility that is reflected in continually greater degree in the passage of laws and ordinances to compel installations of fire control equipment, for the removal of fire hazards and for the imposition of penalties for neglect, carelessness or law violation that results in the origin or spread of fire.

#### **The City Also Responsible**

It is a personal responsibility the enforcement of which, long recognized in the Courts, under the Common Law, and now coming to be recognized under the Statute Law and Ordinances of various cities, is at last being recognized by many reputable public journals. Perhaps the most forceful utterance along this line has been made recently by The Fire Engineer (New York) which in its July issue declared:

"Every municipality in this Country stands in danger of a CONFLAGRATION. A conflagration projects ahead of itself a withering hot blast, its trajectory determined by the wind, and within which firemen are helpless, unless aided by sprinklered buildings whose spray will absorb the heat and furnish, at least, a temporary stop.

"Every municipality should, at strategic points, establish Fire Stops by Fire Shutters, Fire Doors, Wire Glass Windows, but chiefly by systems for dense spray in the interior of the 'stops'."

Again, commenting more specifically on the sprinkler phase of protection, the editor said:

"In Fire Retardant buildings, the spread of fire is

from contents to contents. It is the part of wisdom for every municipality to surround its congested and high value section with spray producing apparatus, such as sprinklers, within the buildings surrounding that district.

"If the cheaper property cannot stand the expense of such preparation, such sprinkler systems should be the charge of the municipality. In fact, every building should be required to have a sprinkler system, which would act at least as a temporary fire check."

#### **Advanced Line of Thought**

"Fire resistant" buildings would be better than "fire retardant" buildings, as a mode of definition; but the editor's thought is clear, and he goes further than any previous advocate of compulsory private fire protection, inasmuch as he urges that such protection as may be necessary to the general public safety be provided at municipal cost, if the individual plant which is the keystone of the protective arch is not of sufficient magnitude, or does not involve values of great enough magnitude to justify its complete protection as a private enterprise.

Other journals are gradually coming to the same opinion.

Those things all emphasize—for New York especially—the necessity for complete private systems of fire control. They must be installed; but once installed, they must have adequate care and maintenance to assure perfect operative conditions, and all plants protected by automatic sprinkler systems must be assured sufficient fuel for next winter to prevent their freezing.

#### **Chimney Construction**

NEXT to sparks falling upon and igniting wood shingle roofs, poor chimney construction continues to be the most prolific cause of fires. A committee of the Clay Products Association is working steadily to secure an abatement of the evil, and in the past few months has secured the adoption of a model chimney construction ordinance by a number of cities throughout the country. The committee reports that while numerous communities have regulations calling for the fireproof lining of chimneys, "little effort is properly made to enforce the provision."

As cities grow in area and population the need for the adoption and strict observance of safe building ordinances, becomes increasingly greater, and the community that fails to thus protect itself is criminally negligent.

In no section of the country is the need for good flue construction so great as in the South, where the fire loss from this cause alone reaches extravagant totals year after year.



## Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs, the first cost is the only cost entailed.

### The Ideal Skylight

We have manufactured exclusively for us a Corrugated wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable fireproof skylight. Easily put into place and is much more economical than other types of skylights.

*A word from you will bring the whole story—prices, pictures and samples.*

**KEASBEY & MATTISON COMPANY**

DEPT. B-3,

AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding,  
85% Magnesia Pipe and Boiler Covering, and Asbestos Building Lumber



### Magnitude in Present-Day Construction Work

**S**IZE and speed distinguish most of the present-day undertakings in the construction field. Contracting firms that four years ago would have looked upon a million-dollar contract as large, are today as readily undertaking work that runs up into the tens of millions and are handling men by the thousands and material in heretofore unheard of quantities.

The following authentic figures regarding the largest destroyer plant in the world at Squantum, Mass., are, therefore, of peculiar interest. This plant, built by the Aberthaw Construction Company of Boston, for the Bethlehem Shipbuilding Corporation, Ltd., was started in October of last year, and the work carried through to completion during one of the most severe winters that New England has ever known.

The site when the builders started work consisted of a marsh with a few acres of upland here and there that were slightly above high tide level. In order to make land on which to build buildings one and one-quarter million cubic yards of filling had to be deposited upon the land. About two-thirds of this quantity was dredged up from the harbor by the dredges which were forming the launching basin and channel that connects with the main ship channel. The remainder of the material was dug by steam shovels in various adjoining gravel pits. In order to move this amount of material a travel of 140,000 car miles was recorded.

Five thousand freight cars full of building material were brought to the job. The size of this can be gained if it is remembered that these cars placed end to end would reach from Boston to Worcester, and in addition to this 50,000 truck loads and team loads of material of various kinds was brought over the road.

Most of the buildings are built upon piles, about half a million lineal feet of wood and concrete piling being driven.

The steel framing of the buildings called for 11,000 tons. The area of the roofs of the buildings amounts to 30 acres, and the perimeter of them is just under three miles. There are twelve acres of window glass in the job requiring 110 tons of putty to fasten it in place. Six miles of standard gauge railroad track were laid around the buildings and connecting to the main line of the N. Y., N. H. & H. R. R. In addition to this two miles of narrow gauge track and four miles of trolley line to connect with the Boston Elevated Railway were put in.

#### 16,000 Sprinkler Heads Used

The wood roofs and wharves and docks and temporary buildings called for a total of 10,000,000 board feet of lumber, the bulk of which was cut in the south. Thirty miles of piping were needed in order

to take care of the needs of water and sewerage, steam, compressed air, fuel oil, sprinkler lines, fire mains, etc., and 16,000 sprinkler heads to protect the buildings from fire. 8,000 gallons of paint were needed for windows and steel and woodwork, etc.

For carrying through the great undertaking the Aberthaw Construction Company added quickly to their permanent organization enough men to make up a total of nearly 6,000. They have now underway for the same clients a far larger undertaking on the Pacific Coast that may eventually call for the work of 20,000 men.

### Municipal Building Codes

**P**ROBABLY eight or nine cities throughout the country have adopted practically in its entirety the model building code prepared by the National Board of Fire Underwriters. While the number seems relatively small, it by no means measures the usefulness of this department of the Board's activities. Many communities, both large and small, while unwilling or unable for various reasons to accept all provisions of the suggested code, yet have incorporated many of its requirements into their respective building regulations, and as their value is demonstrated it is fair to assume still other features will be adopted from time to time, increasing in such degree the safety and comfort of the communities affected.

The acceptance of a thoroughly modern building code; one that will reduce the fire and panic hazard of a city or town, and at the same time add to the comfort of the property-owners, is a slow and at times seemingly a hopeless proposition. So many interests are concerned that anything like unanimity of opinion is out of the question—unless, indeed a strong civic body—such as a Chamber of Commerce gets behind the movement and compels action—and opposition from the powerful lumber interests which feel that every advanced code is in opposition to the liberal use of wood in building construction work, can always be counted upon.

But if slow, the drift toward fire-safe building is none the less sure, and a few years hence the city or town that permits the erection of combustible frame structures within its borders, will be the exception to the general rule.

A feature in connection with the code of the National Board of Fire Underwriters that is highly gratifying was thus touched upon by Professor I. H. Woolson, of the association:

"The code has had one very marked success, and that is in being adopted as a text-book for schools of architecture and engineering. Three years ago we began to ask institutions of that character who wrote in for information if they would like to use the code in their classes."



### The lesson the Indian taught the Settler has had to be learned again

WHEN the Indian went out to destroy a settlement he had one sure master-stroke—fire. His weapon was a flaming arrow. His target an inflammable roof.

Substitute a modern, thriving city in place of the small settlement and instead of the Indian's arrow a wind-driven fire-brand. This is the flint and tinder for our modern town-wide conflagrations.

The world is just awakening to the danger of the inflammable roof. It is dawning on our national consciousness that roofs of wood, paper, tar and canvas are fuel for flames.

When you realize that your property's safety from communicated fire depends on its roof, when you realize that your building is at the mercy of every inflammable roof in your town, then Johns-

Manville Asbestos Roofing will dawn on you in a new light. Not as a roofing that you would like to have some day, but as a safeguard you should invest in now—before it is too late.

Johns-Manville Asbestos Roofings: Asbestos Built-Up Roofing; Asbestos Ready Roofing; Corrugated Asbestos Roofing; Corblende Shingles; Transite Asbestos Shingles.

H. W. Johns-Manville Co., New York City  
10 Factories—Branches in 61 Large Cities



# JOHNS-MANVILLE

## Service in Fire Prevention

## WEATHER:

Always warm in winter and cool in summer if you are in a firesafe home, office or factory building.

# The Fireproofing News

LATEST  
EDITION

CONTAINING DETAILED DESCRIPTIONS OF NEW DEVICES AND APPLICATIONS OF MATERIALS WHICH ARE OF REAL VALUE IN FIRESAFE BUILDING; ALSO NOTES ON THE LATEST BOOKLETS, CATALOGS AND OTHER FIRESAFE LITERATURE, WITH OTHER ITEMS OF INTEREST TO THE FIREPROOFING FRATERNITY

Copyright by Construction Publishing Co., of New York, N. Y., 1916

New York City, N. Y., August, 1918

Priceless

## "As a Man Liveth"

Captioned as above the Associated Metal Lath Manufacturers, of Cleveland, has issued an admirably illustrated and printed work, emphasizing the need for improving the housing conditions of wage earners, and telling how this may be done in a thoroughly practical and inexpensive manner.

Views of individual and groups of houses for industrial workers are shown, all having been actually erected and all affording thorough satisfaction alike to owners and tenants.

To quote from the book: "The ideal combination of economy in construction and maintenance, practicability and flexibility in architectural design, beauty and permanence of structure, is secured by stucco on metal lath construction. This combination with metal lath and plaster for all interior walls and partitions will provide both sanitation and fire prevention. All of these features can be had at an initial cost only slightly exceeding the cost for the ordinary type of wood construction."

In addition to their attractive appearance stucco homes are permanent and firesafe; qualities that will especially commend them to readers of CONSTRUCTION. "Properly built, such a home is in little danger from fire, and in conjunction with a fire-resistive roof, a conflagration is an impossibility."

The Associated Metal Lath Manufacturers is an organization made up of the following named makers of approved metal lath: The Berger Manufacturing Company, Can-

ton, Ohio; The Consolidated Expanded Metal Companies, Brad-dock, Pa.; The General Fireproofing Company, Youngstown, Ohio; Milwaukee Corrugating Company, Milwaukee, Wis.; North Western Expanded Metal Company, Chicago; Penn Metal Company, Boston; Sykes Metal Lath & Roofing Company, Niles, Ohio; Truscon Steel Company, Youngstown, Ohio; Youngstown Pressed Steel Company, Youngstown, Ohio; The Bostwick Steel Lath Company, Niles, Ohio.

Use of second-hand lumber reduces the building cost and increases the fire hazard. Property owners when tempted by this specious plea for false economy should recall the old proverb about "saving at the spigot and wasting at the bung."

For the use of small contractors The Little Whirlwind Mixer Company of La Crosse, Wis., has placed upon the market a mixer that can be run by hand power if desired.

How scientific industrial illumination can best be obtained and the numerous advantages induced thereby is dealt with in an illustrated booklet newly issued by the Holophane Glass Company, 340 Madison Avenue, New York City. Efficient lighting of factory buildings is a most important question with manufacturers, for upon it depend in considerable measure the quality and quantity of the output of a plant.

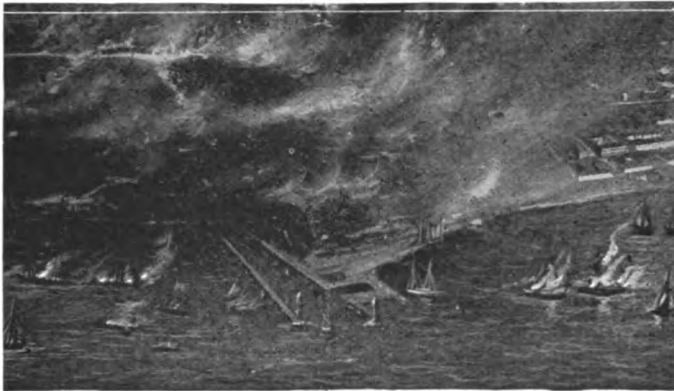
Monitor sashes and operators—what they are and their place in building construction—is described in an attractively prepared booklet by the Detroit Steel Products Company, of Detroit, Mich., manufacturers of the widely known "Fenestra Line."

Among the most progressive of the cement manufacturers is the Atlas Portland Cement Company, of New York City, which has originated many of the approved practices in the cement industry. The literature of the Company is prepared with unusual skill and has been a highly influential factor in increasing the demand for Atlas products. The latest advertising put forward by the corporation is a booklet describing non-staining mortar for pointing, setting and backing, and showing numerous photographs of buildings in which the material is in use.

A concise description of the thorough methods employed in the manufacture of "Buckeye" conduit from ore to the finished product is given in a booklet prepared by the manufacturers—the Youngstown Sheet & Tube Company of Youngstown, Ohio. The Youngstown product has a nation-wide reputation, which it justly deserves. To readers of CONSTRUCTION desirous of employing building material that will add to the fire-safety of their prospective properties, we would advise securing one of the booklets above referred to.



## The Fireproofing News



The Great Chicago Fire of 1871. Property loss \$200,000,000.  
(From a contemporaneous wood engraving)

## The Best Fire Insurance is Fire-resistive Construction

A small fire—abundant fuel—a great conflagration. That was the story of the Chicago fire, it is the story of hundreds of other fires.

## Berger's Expanded Metal Lath

used as backing for stucco and plaster gives practical fire-resistance as well as permanence at a very slight increase over flimsy inflammable wood construction.

Send for our Metal Lath Hand-book No. 19-F



**The Berger Mfg. Co., Canton, Ohio**

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### Contracts Secured By Turner Construction Co.

Recent contracts secured by the Turner Construction Company, of New York City, include the erection of reinforced concrete buildings for the American Agricultural and Chemical Company, at Jacksonville, Fla.; for the Pennsylvania Cement Company at Bath, Pa., and for the Vacuum Oil Company at Rochester, N. Y.

### Building Activity in Principal Cities

Reports of estimated cost of building work authorized in the first and second class cities of New York State show a total of \$7,072,332. This is the smallest volume of building reported for any June since 1915, which is the date when these statistics were first collected. In comparison with May the decline was 23 per cent., but contrasted with June, 1917, the decrease was 54 per cent. The building costs reported for June, 1917,

1916 and 1915 were, respectively, 15, 31, and 16 millions of dollars. The borough of Manhattan and the cities of Utica and Yonkers filed plans for June, 1918, showing larger expenditures than in June, 1917. The borough of Manhattan and the cities of Albany, Rochester, Utica and Yonkers reported a greater volume of building in June, 1918 than in May, 1918.

### Clay for Brickmaking

Magnificent and inspiring as the scenery is along the towering banks of the lordly Hudson, it isn't anywhere near as much of a money maker as the lowly brick which are made along the shores of that favored stream. In the ten years past some 11,390,110,000 brick, valued at \$60,407,258, have been fashioned out of the clay close to the water's edge. These brick, if laid flat, would make a sidewalk that would reach around the world. And it is estimated that there is

still enough clay left on the banks of the Hudson to make 1,200,000,000 brick a year for the next fifty years.

This stratum of clay extends along both sides of the Hudson from New York to Cohoes, above Troy, and takes in ten counties, one of them in New Jersey. It is the greatest brickmaking district in all the world. For a century the industry has thrived, and, strangely enough, the method of manufacture has changed hardly any in the lapse of years.

It was in 1817 when the industry began to thrive. James Woods, an Englishman, had learned the trade of brickmaking in his native land and was attracted to Haverstraw, up the west bank of the river a few miles from New York. The vast quantities of fine brick clay there and the abundance of wood for fuel appealed to him, and he started the first successful brickyard in Rockland county. To Woods is given the credit for dis-



covering that coal dust made a fine ingredient for good brick. He also invented tempering, mixing and molding machines, and these, but little modified, are used even in these time of new appliances for all forms of the industry.—New York World.

### The Building Tendency

Notwithstanding restrictions, and the fact that only essential building is being done, or is to be done till the war is won, there are matters of interest and comfort to the clay-working industry in the tendency of the times in building operations. For one and the main thing, the tendency is plainly toward better and more permanent building. Wherever the Government is building a new powder plant, has built a shipyard or enlarged an arsenal, calling for housing for employes, the plans include the erecting of permanent buildings in which clay products are conspicuous.

It is noticeable, too, that in the general housing plans for crowded industrial centers attention is being turned more and more to permanence in building. This is quite a change from the early days of the war when the great rush called for lumber and many temporary buildings, and it is one of the good signs of the times.

It logically follows, too, that plans for private building, whether it be for a factory or warehouse now for war work, or for a future home, turn more to the idea of permanency. The cost item in building operations has reached the point where permanence carries more weight and is the one compensating idea turned to. So, taking it all together, there is much for encouragement and comfort to the clayworking fraternity in the building tendencies of the day.

### Permanent Housing

Housing the workman, even in these difficult times, is a simple matter compared to keeping him. The shifting of employes from one factory to another, with its great cost and lost time, threatens the efficiency of our industries. This labor turnover, as reported by various manufacturers, reaches the astounding figures of 100 per cent. to 400 per cent. per year.

It costs money to hire and train a workman. In war times, even the maximum possible production

is not sufficient to take care of Government and private demands. Our national success is being measured by labor hours effectively employed. These precious moments should not be wasted.

Permanency in employment depends not only on satisfactory conditions in the factory, but also on satisfactory home surroundings. The workman without a permanent home of the proper character reflects his discontent in his desire for change. Worse yet, the unattractive, unsanitary dwelling undermines the health of the employe, making him less able to work efficiently. Such surroundings drive men to seek recreation away from their homes, ending often in demoralizing dissipation. The slovenly house develops shiftlessness in its occupants.

The American workman asks neither charity, philanthropy nor paternalism. He only wants the opportunity to live according to decent standards. Provide him this, and he will work faithfully, energetically and enthusiastically. A permanent home in which the worker can take pride is the foundation of his ideal. Without the capital to finance his own building operation, he is willing at all times to pay a fair rental or to contract at the right price for ultimate ownership. The actual financing must be left either to Governmental or private capital. That the workman is willing to do his share has been amply demonstrated by his voluntary participation in war loans and patriotic charities.

In our factory buildings immense strides have been made in producing model workrooms which provide not only for the maximum output but for the well-being of the employes. These modern, sanitary, fireproof plants, flooded with daylight and fresh air, have set a standard for industry everywhere. Anyone has only to enter such a building to feel the impetus that the surroundings give to industry. These same principles which manufacturers have found so successful in the factory building should be carried into constructing private houses.

England, in developing its mammoth war industries, has found it decidedly worth while to build attractive, permanent dwellings for its workers. Many of these housing projects include whole towns

in the one operation, with schools, churches, stores, etc. Attempts, at first, to build temporary barracks were early abandoned, and these bunkhouses have been replaced by permanent dwellings of beauty.

Some of our American industries have already demonstrated by their own experience that it pays to have proper housing conditions for their employes. Today large housing projects are developing in many parts of the country as a result of the tremendous expansion in war industries. In building them, the one idea to keep foremost is to make these dwelling places permanent and attractive. If we do this, the worker will have a permanent satisfaction in his home surroundings and will devote himself to his work with increased interest and enthusiasm.—“Modern Building.”

### They Acknowledge the Corn

It is a significant fact that wooden shingle manufacturers have at last reached the point where they admit that their commodity is a fire menace. They are taking steps to fireproof their shingles, and they state frankly that this move is necessary. Dr. Hermann Von Schrenk, of St. Louis, a consulting engineer, led the shingle men into this trap with his device for fireproofing wooden shingles. He delivered an address before the shingle manufacturers of the Pacific Coast some months ago, from which we quote in part. This talk is worth reading, and it gives the manufacturers of roofings a chance to say with the Frenchman “it is to laugh” at several stages of the discussion. Dr. Von Schrenk said in part:

“In this matter of fire protection your competitors are way out in front of you. They see the advantage to them of exploiting your weakness. But I want to say that as a result of what we have done already we are now in a position, fortunately, to go before the public and say truthfully that we can furnish a shingle that is fire-resisting enough for anybody.

“In finding a fire retardant that would be satisfactory the hardest kind of requirements had to be met. Obviously we could not go before the public with any half way measures or with a product that would not stand the test of time. We must tell the truth. We must deliver the goods.”

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"Originators of the Asphalt Shingle"  
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

George A. Watson, Editor  
Bruce E. Loomis, Ins. Eng. Editor

Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

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L. C. Watson, Sec.-Treas.

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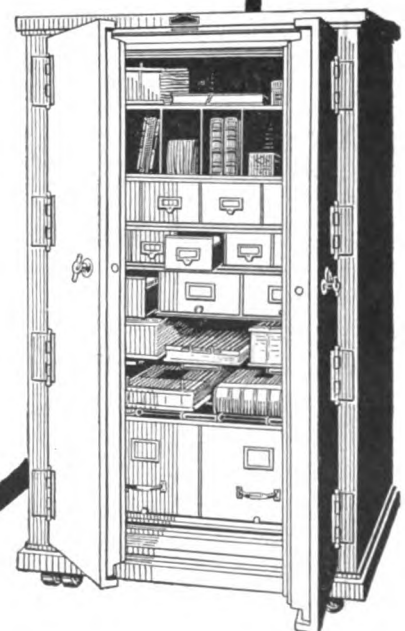
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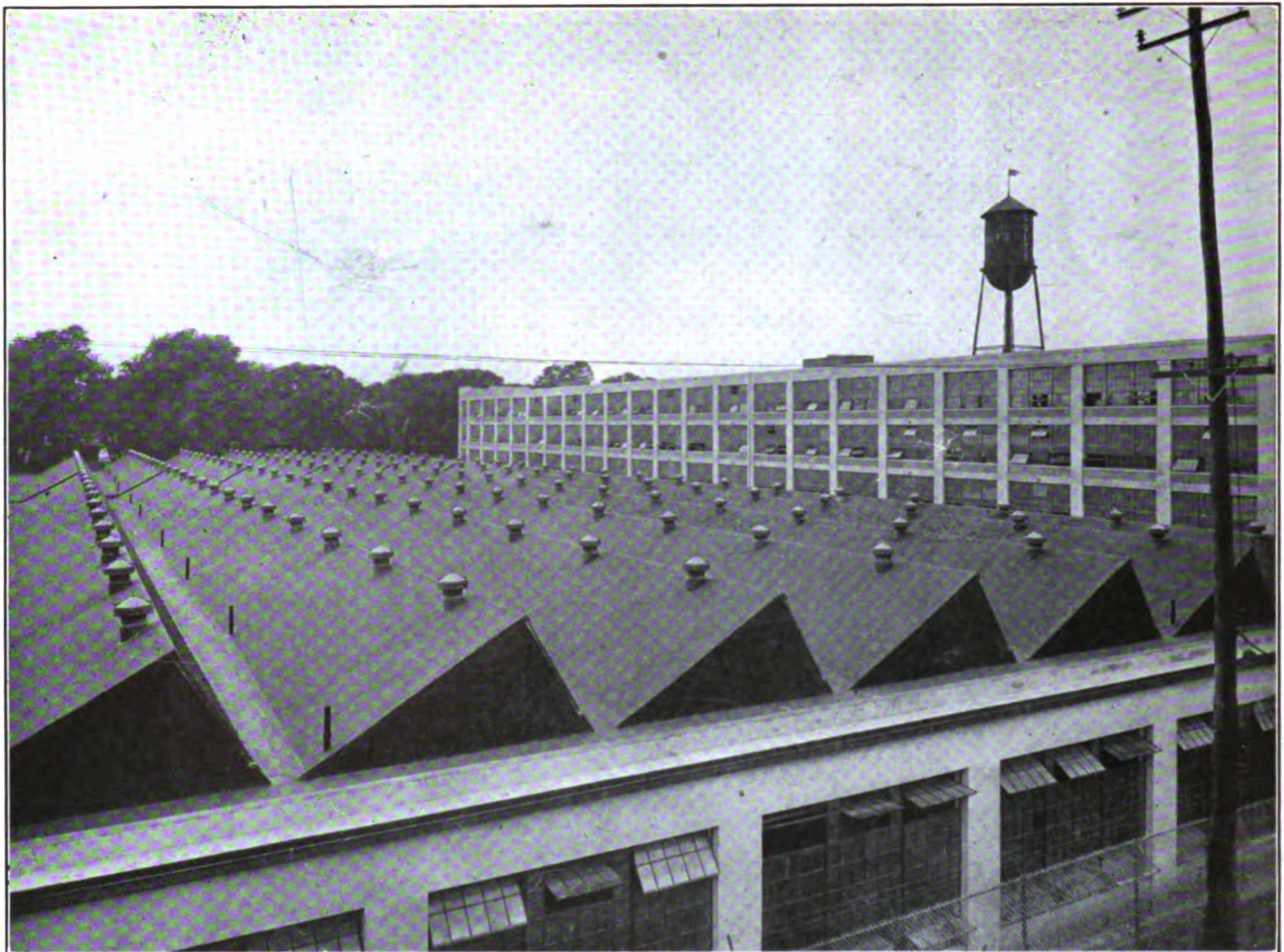


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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

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No. 3

## *Fire Menace From Neighboring Property*

**A**MONG other important subjects considered at the most recent convention of the Canadian Manufacturers' Association, was the proper protection of industrial plants against the fire hazard. The committee appointed to deal with the topic severely scored the attitude of the Canadian insurance offices in such connection, averring that their inspectors gave no hint to the manufacturers as to the hazards in their respective properties, contenting themselves with charging additional premiums if the dangers justified such procedure. In marked contrast to this practice according to the committee, was the practice of the American insurance companies whose representatives seemed concerned in reducing the fire menace wherever and whenever it was discovered, and promptly notifying the manufacturers of all danger points in the plants and intelligently advising how these could be remedied.

High tribute was paid by a number of leading Association members to the protective value of automatic sprinklers, and the saving effected through their installation, however expensive the equipment might be.

Another point of importance to manufacturers, not alone to Canadians, but to Americans as well, and one that has not been given anything like the attention it deserves, is the fire menace of adjoining property.

Dealing with this matter one of the Association men said:

"Inspection, to my mind, is one great feature that will help to solve this problem—proper inspection, adequate inspection, inspection that looks to the absolute prevention of fire and not to the making of money out of the premiums and not the fixing of the rates. The inspector appointed by the underwriters simply inspects so that he may give his report as to what rate should be placed upon each particular property or risk. That is the wrong way. We want inspection that will tend to prevent fire waste and the

inspection should be such that my property should not be endangered by the property next door to me. In local circles if there is a contagious disease we don't think there is anything wrong if we go out and shout to the housetops if the inspection is not proper and fully and entirely protecting us. But still my neighbor may sit right beside me with the most dangerous and carelessly conducted plant, endangering me all the time and, because of being nice and gentlemanly, I go on and suffer; I am afraid to speak. The time has come when we must insist that not only our own premises but our neighbor's premises shall not be a menace to us, and in that way we will produce the conditions we are after. This can be done; it is not a tremendous problem; it requires business application to prevent. I think fifty per cent. and I believe seventy-five to ninety per cent. of the fires can be prevented. In my own experience in business I have only had one small fire, but I have never had the experience of a fire yet that was not through carelessness, smoking or otherwise."

## **After The War Building**

**W**ITH the end of the world war clearly in sight with victory perched on the side of law, order and liberty, business men are giving earnest attention to the problems that will force themselves upon us with the formal declaration of peace.

That a vast amount of reconstruction building in the old world, and a great amount of additional building required in this country to meet industrial demands created by the new conditions, is clearly recognized, and material manufacturers, architects, engineers and contractors should plan to meet the impending change. It is none too early to do this, and to do it in the broadest possible way. America to the fore will be the slogan of the near future. Let the building world be ready to do its full part in the great forward movement.

## Appealing To The Prosperous Farmers

**A**MONG the well conducted trade organizations of the country is the Portland Cement Association, membership in which is held by practically all of the leading cement manufacturers of the United States. With branch offices established at leading centers from New York to San Francisco, each in charge of trained engineers whose services are at the free call of contractors and others concerned in building projects, and with an unusually capable publicity staff alert to its opportunities the Portland Cement Association in the several years of its effective operation has increased by many fold the use of cement, to the profit not alone of its membership offices, but of the communities and individuals using the product.

At present the Association is directing its educational propaganda to the farmers, using for such purpose the advertising pages of leading farm journals, and issuing a special booklet describing and illustrating the many uses for concrete upon and about the farm.

Never before in the history of this country were farmers making as much money as they are at the present time, and equally true is it that they were never in as receptive a frame of mind to hear of ways and means for permanent building construction as they are today.

If the brick, terra cotta, and other fire resistive material manufacturers were as alert to their opportunities as are the cement men, they too would be making their appeal to the money-making farmers and getting a share at least of the business now being corralled in large measure by the cement dealers.

Of the field for desirable business sales offered by farmers, the Portland Cement Association says:

"Cement product plants and concrete contractors with suitable shop quarters for winter work can keep busy practically the entire year. This is particularly true of those who make a specialty of cement staves, concrete building blocks and similar concrete units. All such contractors or manufacturers can accumulate during the winter a stock of material that will be ready for use at the earliest possible moment in the spring. With such a stock on hand these contractors have a good start over their less wide-awake competitors.

"Barns, hoghouses, poultry houses and other farm buildings are now being constructed of farm staves.

"Many kinds of concrete work are now carried on almost regardless of season and temperature. By observing a few simple and easily applied rules for preparing concrete mixtures, freshly placed concrete, a great deal of outdoor concreting can easily be done, and the resulting work will be just as successful as though carried on during more mod-

erate weather. But there is lots of indoor work to be had for the looking. Barn and stable floors are examples.

"Concrete products plants should take advantage of present opportunities to keep their plants working throughout the year. A little expenditure of time is all that is necessary to fix up a room where the block or stave silo builder can keep busy piling up a stock of material ready for immediate delivery when a structure is wanted.

"If you are inexperienced in concrete work in cold weather, write for our booklet, 'Concreting in Cold Weather,' which treats fully on the most approved methods to be used."

### What Caused the Fire?

**F**ACTORIES on war work are always in danger. Paid emissaries of the Kaiser have been, and undoubtedly are now snooping around looking for an unguarded factory wherein an explosion might be caused or a fire started. Your mill may have been checked with a black cross to receive early attention. Are you prepared?

There are several items that should have prompt and careful attention in this connection. Of course it is understood without saying that your plant is thoroughly equipped with ordinary fire fighting apparatus such as automatic sprinklers, fire pump and suitable hose, but—do you know in what condition this equipment is at present? Have you a reliable mill fire department and are these men regularly drilled and the equipment as regularly inspected and tested? It is much more safe and less expensive to make such tests before, rather than at the time of a fire.

What about your watchman? Is he a good, strong, reliable American that you are sure you can trust to give a good account of himself in time of trouble? Is he suitably supplied with the tools of his trade, including a portable fire extinguisher as well as his weapons for physical defense? Suppose we admit that you have a trusty man on this job, what have you done to prevent his being attacked and overpowered by several opponents?

A strong, practically unclimbable, steel mesh fence should be provided, suitably equipped with regularly spaced and properly located electric lamps, so as to brilliantly illuminate an area of space on both sides of this protective fence. This allows the watchman to become the *watcher* instead of the *watched*, as is so often the case under "before the war" conditions, which still continue in many otherwise up-to-date manufacturing plants.

Take these questions home to your own factory and see if you feel as certain and as safe as you think you should.—*Cotton* (Atlanta).

## *Interesting Data As To Cost Of Stucco House Building*

**M**AJOR HENRY W. LOCKETT, of the construction division of the United States Army has compiled some interesting figures as to the cost of industrial homes erected at Camp Eustis, Va., recently. The figures, which include only expenditures for labor and material, exclusive of plumbing and heating fixtures, are as follows:

For a 66-man, two-story barracks 30 x 60 ft., wood construction \$4,302, stucco \$4,570, showing a difference of 6 per cent. between the wood and the stucco; officers' quarters, two-story, 30 x 77 ft., wood \$6,350, stucco \$6,661 a difference of 5 per cent.; lavatories, one-story, 20 x 49 ft., wood \$1,442, stucco \$1,550, or 7½ per cent.; mess hall, one-story, 20 x 154 ft., wood \$3,636, stucco \$3,893, or 7½ per cent.; storehouses, 20 x 98 ft., wood \$1,706, stucco \$1,883, or 10½ per cent. Major Lockett estimated that in the cost of the completed structures, after overhead, plumbing, etc., shall have been added, the margin will be reduced to 5 per cent., and pointed out that the lower maintenance cost of the stucco would soon equalize even the 5 per cent. difference. He estimated that in heating alone there will be a saving of 18 per cent.

L. E. Kern, of the requirements division of the housing corporation, Department of Labor, also stated that it was too early in the game to say that any one material would be used in preference to others. This, he said, was especially true in the housing corporation, since it was only three weeks since the first contract was let. He said his greatest difficulty at present was that, no matter what material was specified, he received complaints from dealers in other materials that could have been used for the same purpose. As an illustration, he pointed to the matter of slate roofs, which when specified brought a protest from the makers of composition roofing, and vice versa. He said that this condition arose from a misunderstanding among the material men, in that heretofore the largest part of Government construction was specified by fixed, standard specifications, and that the material men were under the impression that the housing corporation was formulating similar standard specifications and were anxious to have their materials covered. But, he stated that at present there were no standard specifications contemplated, and that before the housing program was complete the demand would be so great that all kinds of construction would be used.

George W. Ginder, superintendent of the computing division of the United States Supervising Architect's office, under whom the specifications are writ-

ten, said that he preferred and always specified either a heavy wire mesh or metal lath, except under unusual circumstances. The choice was always one of economy in the locality where the building was to be built. He stated that owing to conditions terra cotta shortly would be so difficult to obtain as to be practically off the market, in which case, he said, expanded metal and stucco would be extensively used as a substitute.

The housing corporation has reduced to a system the allocation of purchases to conserve freight space and it is the application of this system that has given rise to the complaints of the material men. The country is divided into districts, each of which is supervised by an architect. He is selected with reference to his familiarity with the local conditions of the district to which he is assigned or preferably to his actual experience therein, and among his instructions is a set of multigraphed sheets the subject of which is "Availability of Materials for Industrial Housing Projects" (as determined at meetings held in office of R. L. Humphrey, May 31 and June 1, 6 and 7, 1918, and as revised and added to at a meeting held in the same office on July 18, 1918.) Under the heading this note says, "Wherever possible architects should so design projects that the material requirements will be equitably divided among the various available branches of the building material industries."

These specifications, Mr. Kern stated, were carefully compiled so that materials produced in or in the vicinity of the cities and localities covered might be used, and were made irrespective of the size of stocks of materials produced in other localities from which there would be a lengthy freight haul. In Norfolk, for instance, wood-lath and non-fireproof construction was specified for immediate economy and because wood-lath was extensively used there previously. This had to be done in spite of the fact that large stocks of metal lath are stored there.

Mr. Kern invites attention to another phase of the housing program in that the type of buildings is more or less determined by the use to which they will be put. For instance, skilled mechanics will demand a house of a much higher order than immigrant labor, he says, and in certain localities custom demands a certain type of construction, and he says a comparison between the houses being built and similar houses built before the war will show an improvement in construction.

Zenas M. Carter, commissioner at Washington for the association of metal lath manufacturers, is of the

opinion, however, that the housing corporation might be following custom more closely than the situation requires, and in the matter of economy that Mr. Kern outlines Mr. Carter invites attention to the fact that in many of the brick and tile structures the costs are higher than stucco, and that a much less durable interior finish is obtained with the plaster boards the housing corporation is specifying, the maintenance cost of which will produce in a short time a balance in favor of metal lath. Mr. Carter also states that he has heard that, in some cases, brick and tile were specified in localities in which they are not produced,

making freight hauls necessary. Lack of specified instances makes it impossible for the housing corporation to explain the conditions which made this necessary, but Mr. Carter points out that, owing to the wide distribution of sand and gravel, it is possible to maintain economy of freight haul by the use of stucco even if it is necessary to ship the metal lath. In illustration of this the metal lath association has made a study of car requirements for two types of construction, in which a saving of from 36 to 42 cars hauled is shown in two comparisons between wood and stucco.

---

## ***Protection of Metal Roofing***

ONE of the most important items in tin roofing is the proper protection of the material by painting after the roof has been completed, writes H. Colin Campbell in the National Builder. All surplus resin, grease, oil or other foreign material that would prevent paint from thoroughly adhering should be removed. For sheet metal work and tin roofs no better paint has been found than metallic brown, Venetian red or red oxide paint ground in pure linseed oil. This is usually mixed in the proportions of 20 to 25 pounds of the pigment to one gallon of oil.

Tin work should be painted as soon as possible after being laid. If any rusting has started it should be carefully removed before painting. This can be taken off by carefully brushing with a wire brush. There used to be a notion that it was best to allow tin to rust somewhat before painting in the mistaken belief that the paint would adhere to the surface better. This is not true, for a small spot of rust may be gradually enlarged under the paint and in time cause the paint to flake and scale off. Deep rust can be burned off by using a gasoline torch. The heat converts the rust into peroxide of iron, which can then be readily dusted off.

Only good grades of paint should be used for metal work. They should be applied with a short-handled brush that will make it necessary to rub them well into the surface. After the initial coat of red oxide paint, the roof may be painted any color or shade desired to make it conform to some color scheme of the building or its surroundings. Workmen will have to be watched carefully to make them apply the paint properly. The tendency is to use ordinary brushes and spread it out too thin, instead of working it in vigorously as already described.

Paint will adhere better to galvanized iron if the surface is washed with some alkaline preparation that will take off the oil or fat left on the sheet from galvanizing. Washing with a strong solution of com-

mon soda will accomplish the purpose. Roofs and sheet metal work will require painting at intervals to maintain the material in good condition. The frequency with which such maintenance work must be done depends largely on climatic conditions and upon the quality of the workmanship entering into the painting on each occasion.

---

## **Individual Liability for Fire Loss**

TO Portland, Oregon, belongs the honor of being the first city upon the Pacific Coast to enact an ordinance holding individuals liable for loss through fires originating upon their premises, unless it can be proven that the damage was unavoidable. Spokane, it is expected, will shortly adopt similar legislation.

Through no other means can the loss to the country through fire be substantially reduced as in driving home to each property-owner his individual responsibility therefor. When this liability is not only fixed, but the full penalty therefor exacted owners of homes and mercantile buildings will give far more care to the fire-safety of their property than they now exercise, and will taboo utterly the free use of wood in such connection. Especially will they insist upon the abolition of the highly inflammable wood shingle roof with its long record of criminality.

---

## **Fire Prevention Laws of Kansas**

Under the direction of State Fire Marshal L. T. Hussey, the laws of Kansas relating to Fire Prevention and the Protection of Human Life from Fire, have been printed in booklet form, copies of which may be had upon application to Marshal Hussey.

Kansas is among the few states of the country making an intelligent and persistent effort to reduce its fire waste, and its success in this direction is due in no inconsiderable degree to the activities of the State Fire Marshal's office.



## Standardization of School Buildings\*

THIS Committee is not as familiar as it should be with the work of school building standardization, not having followed carefully all the creditable accomplishments of the general committee. For this reason we present our suggestions with much fear and trembling hoping that they may not represent so wide a departure from the general committee's plan of action as to be unavailable for practical use.

### Fire Protection of Schools

A chart is presented with this report which is intended to show the general classification of the many features needing consideration in reviewing the requirements of fire protection of school buildings and their occupancy. We have tried to prepare this in such detail as to definitely fix the many items of hazardous occupancy and fire protection devices in their relative positions of importance and under their proper groupings.

Fire protection in its broadest sense and in its practical application to specific problems covers three principal branches—1, *Fire Prevention*; 2, *Fire Protection*; and 3, *Safety to Life*. *Fire prevention* recognizes the features tending to avoid fires, *fire protection*, the means for limiting their damage, and *safety to life* is inclusive of both in so far as they may apply to personal injury of the occupants of a building resulting from a fire therein. The first two branches, as applied to school buildings, do not differ materially from their application to industrial buildings. The *Safety to Life* branch, owing to the occupants being mostly children, requires special treatment with some departures from the practice usual to safeguarding the occupants of industrial buildings.

### Fire Prevention

Selection of a safe location for the building is of the first importance. The need for a school being often greatest in congested districts makes this a most difficult problem. Serious exposures from fire should be avoided, such as locations near hazardous industrial plants or defective wooden structures. Vacant lots are preferable but when these are not available corner lots may be selected. If the lot is exposed by brick buildings on one side and wood on the other it may be advisable to place the building nearer the lesser exposure.

The availability of a good public water supply should be considered in selecting a site. Large pipes,

high pressures and an ample number of hydrants are the items to be considered.

### Construction

It is needless to say that the most fire-resistive type of construction possible under the circumstances should be used. All features of construction related in any way to fire prevention should be planned in strict conformity with the building laws and the suggestions contained in the National Building Code as recommended by the National Board of Fire Underwriters. The specifications of the National Electrical Code should control all electrical installation, and minor structural features such as roofings, fire windows, fire doors, should all be made under the standards of the National Fire Protection Association and bear the label of the Underwriters' Laboratories. In this connection we may point out that the Government has purchased millions of dollars' worth of goods, such as roofings, fire hose and electrical devices, under no other specifications than that they bear the label of the Underwriters' Laboratories. Engineers, in the employ of the Laboratories, are located in the factories producing labeled goods to guarantee the maintenance of the standards represented by the Laboratories' label. The Laboratories work in co-operation with the National Bureau of Standards.

Construction plans of school buildings may be submitted, with advantage, to the engineers of the local fire underwriters' association. Very often helpful advice or suggestions are available from this source.

The National Building Code specifies details for first class or fireproof construction, second class or open mill construction and third class or ordinary construction. It is possible to use open mill construction with that type of construction so desirable from the fire protection and safety to life points of view, the one-story building. All structural steel should be insulated and in third class construction metal lathing should be used in lieu of wooden laths.

*Vertical communications* are the "bete noir" of fire protection. They tend toward quick destruction of the building and loss of life. Elevators, ducts and all such flues connecting from floor to floor should be cut off and where practicable stairways should be similarly treated. Stairways from basements to the first story must be cut off for safety. The main stairways, with skill, can be designed with shut-offs between floors but under present conditions there is some value in the argument usually advanced that open stairways are essential to a quick exit by pupils and in low buildings are permissible. A properly protected building, however, will not call for the quick

\*Report of Special Committee of National Fire Protection Association.

departure of the occupants which in itself is less safe than a moderate and orderly exit.

#### Fire Protection

Fire protection has two main divisions—1, *Outside*, and 2, *Inside Protection*.

The first branch under this heading is Public Protection, which includes the fire protection furnished by the town or municipality and is best attained in the selection of the site. This branch covers fire alarm service, which, if adequate, maintains a public fire alarm box at the school building, public fire department, and public water supply,—the latter being valued according to the size of the mains, pressure and location of hydrants.

The second division under outside protection is Private Protection. This should include one or more special hydrants located in the school yard and the hydrants should be covered with hose houses containing hose, nozzles, wrenches, a lantern and a fire axe. These are to make quick aid from hose streams possible and to avoid the possibility of injury to children passing from the building if the fire department should be required to lay hose in the usual manner. Hydrant houses may be designed to be ornamental, or if necessary the fire appliances may be kept in a place provided under steps or elsewhere in the main structure.

Where the building is unavoidably exposed severely from fire by a neighboring structure the windows on the exposed side should be approved fire windows of wired glass in metal frames.

#### Inside Protection

All fire appliances used should be devices approved and labeled by the Underwriters' Laboratories in order that their reliability and quality may be assured.

*a. Fire Alarms.* Automatic alarms have not been used much in schools but as the fire hazards are rapidly being increased by the introduction of the industrial arts courses, kitchens, etc., it seems necessary to adopt this means of protection to insure the safety of the children and of the structure. Automatic alarms are thermostatic devices operative when the temperature of a room rises abnormally, and in a school they should operate a small alarm bell and an annunciator in the principal's room and be connected to the nearest public fire station. Thermostat equipments should cover the power plant, shops, closets and storage rooms, laboratories, the kitchen and libraries.

Manual fire alarms are now in general use and are fairly satisfactory. Their mechanical features need to be improved to effect greater reliability in many cases. They should be made operative from the power plant, basements, shops, offices, corridors and be readily accessible to all teachers.

*b. First Aid or Hand Apparatus.* This class of

fire protection includes standpipes and hose, hand chemical extinguishers and fire pails.

There are national rules for the installation of standpipes which represent the best experience and thought on the subject. They are in too much detail to describe here but all contracts should specify that standpipes and their appurtenances be strictly in accordance with the N.F.P.A. standards. Small hose streams from internal standpipes can be handled easily by one person and give very effective fire protection. A good water supply with pressure in the standpipe at all times is essential. Standpipes should have hose outlets in the power plant, shops, corridors, and hall and on the stage if there be one.

Hand chemicals are in common use and are very effective on incipient fires. The standard 2½-gallon type which is operated by simply turning bottom upward should be used. These extinguishers require recharging with new acid and soda every year to maintain their full efficiency. They should be hung in readily accessible and prominent places in all corridors and rooms except class rooms.

Fire pails are very acceptable fire extinguishers when properly maintained. They should be painted red and marked "Fire." In the power plant, shops and kitchen they are especially desirable and they may be substituted for chemicals if desired.

*c. Sprinklers.* Automatic sprinklers have been long accepted as the most efficient form of fire extinguishing apparatus. Most schools could be equipped with sprinklers and thereby insure both safety to the building and safety to life.

When the school building is heavily exposed to fire in adjacent property the school windows on the exposed side can be protected by open sprinklers placed over the windows. These are turned on by hand and serve to keep neighboring fires from entering the building through the windows.

Automatic sprinkler systems if not covering the entire building should cover, where possible, all of the power plant, laboratories, shops, kitchen, stage, locker rooms, store rooms, and laundry. The entire system should be installed strictly in accordance with the N.F.P.A. standards. An adequate water supply is essential and an automatic sprinkler alarm should be included.

#### Safety to Life

The very best means for guarding the lives of the children and other occupants of a school building is by the installation of an efficient automatic sprinkler system. Loss of life in sprinklered properties has been practically negligible. All hazardous rooms should be protected if a complete system cannot be installed.

The importance of good construction has already been pointed out. It is evident that the possibilities of escape from a building are in general proportionate

to the speed of its combustion. The danger from smoke calls for special consideration from a life safety standpoint, so special care is necessary in planning exits. These details have not as yet been worked out but they will cover doors from rooms, width and lighting of corridors, halls, stairways and passages, etc. Inside steps, other than regular staircases are objectionable. One, two or three steps in vestibules and inside halls should be especially avoided. The first floor exit should preferably be on a level, or one step only below the general floor level and the approaches to the grade made by outside steps or ramps. Internal corridor and vestibule doors are also undesirable. Schools as a whole seem to lack liberal-sized outer doorways and approaches. The latter are especially important and should be laid out in recognition of the necessity for access by the fire department and the passing of the children from the premises at the same time. Where possible outer walks from main exits should not be laid out parallel to the walls of the building unless twenty feet away therefrom. Stairs should be of the standard type and of a width to provide for but two pupils between hand rails.

Effort should be made to arrange the exits from the second floor directly to the outside instead of into the first story. This can be often accomplished without impairment to the architectural design by placing the outer doors at the half-way landing, the lower portion of the stairway being outside, open or in an open porch. Exits from the basement should be directly to the yard. Elevators should be in towers cut off by fire walls and standard fire doors.

Fire drills are a necessity in a school. They should be conducted with as little aid from the teachers as possible, the idea being to have the pupils act uniformly and automatically as a body. The same alarm should be used for drills and actual fires. Discipline and *irregular* practice are essential. We have added here a new element for safety "study." This calls for teaching occasionally, through reading or a lecture, something about the fire danger, its importance, its prevention and how it is fought.

#### Maintenance

Maintenance affects all of the points covered above and it is of great importance. It is divided into three branches as follows:—

*Cleanliness:* This is the means for avoiding most fires. It is dependent on the janitor service and includes such details as waste cans, ash barrels, care of waste paper, etc. All waste paper and other waste should be kept in metal receptacles and not in canvas bags as is so often done.

*Guarding:* Important school buildings should never be left without the care of a reliable janitor or watchman. The statistics show that many school fires start

after the janitor has left the building. Watchmen should be required to make regular rounds with records on an approved watchman's clock. Fences should be arranged with a view to guarding against malicious persons and to safety of exit from the yard. In high and trade schools the study courses could well lead to the organization of a school fire brigade to include principal, teachers and pupils, this brigade being organized and drilled to inspect for dangerous conditions, aid in the exit of the pupils, give the alarms and extinguish incipient fires. There are many possibilities in the fire brigade as an educational feature.

*Inspection:* The building, exits, fire alarms, hand apparatus, sprinklers and fire drills should be under frequent inspection by a special inspector employed by the city or by a regular fireman or his chief and also by the principal or local fire brigade previously described.

#### Fire Hazards

Cleanliness, guarding and inspection have special reference to fire hazards which are in two classes, common and special.

Common hazards are those common to most properties, and for the school include boilers, heaters, fuel, ashes, electrical and gas apparatus and refuse.

Special hazards are those additional hazards incident to the occupancy of the building, and for the school include those of the laboratories, shops, kitchen, incinerator and laundry.

Fire protection though necessarily a subject of much detail has but few basic principles as shown by the main sub-divisions of the chart and this outline, and if these fundamentals are covered in the proposed standard for schoolhouses a marked improvement in the annual fire record against schools undoubtedly will be assured.

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#### Rapid Steel Frame Construction

In the construction of the steel frame for the Statler Hotel at St. Louis, Mo., last year, steel erection proceeded at the rate of two stories every 4½ days. The building is 150x130 feet, 20 stories high and contains 4,500 tons of steel, 700 tons of which were used in the basement. A 10-hour shift was worked for the first few weeks. The steel erection was done with two 12-ton guyed derricks.

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#### To Aid War Housing

An organization known as the Division of the United States Housing Bureau has been formed at Sharon, Pa., its purpose being to aid in the building in that city of 500 houses for workmen.



## Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs, the first cost is the only cost entailed.

### The Ideal Skylight

We have manufactured exclusively for us a Corrugated wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable fireproof skylight. Easily put into place and is much more economical than other types of skylights.

*A word from you will bring the whole story—prices, pictures and samples.*

## KEASBEY & MATTISON COMPANY

DEPT. B-3,

AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding,  
85% Magnesia Pipe and Boiler Covering, and Asbestos Building Lumber



## Building Zones For Cities

**I**F an owner of property in a select residential district should place a slaughter house or an offensively kept pig pen on his property, there is little question that his neighbors would protest; and we do not believe that even the most extreme advocate of individual rights would maintain, or at least could find endorsers to, a proposition that it would be unconstitutional or even unjust in this "land of the free" to compel such owner to discontinue the maintenance of such a nuisance. It is well recognized in law that no person has a right to do, even with his own property, anything which is seriously detrimental to others. Some uses of private property so seriously interfere with the health and comfort of owners of adjacent property that it is universally admitted that they should be prohibited.

A question of course arises as to how far this limitation of the use of personal property should be carried. The pig pen is admitted, but the painting of a house bright purple with yellow and green trimmings, although it might offend the artistic sensibility of all the neighbors and seriously detract from the appearance of an entire group of residences, probably is not prohibited by any municipal ordinances, and it is a question whether many would uphold the interfering with personal liberties to this extent. The general rule so far has been that only those uses that can be classified as nuisances can be interfered with, and possibly only those uses that are injurious to health or safety are universally admitted to come under this head.

This speaks well for a country which has often been accused of being more mercenary than other civilized countries, but it is coming to be realized that injury to the value of property also should be prohibited. That is, no single owner has the right to erect or maintain structures on his property, or carry on operations, which will lower the value of property in the neighborhood. This is one of the principles at the foundation of the modern method of zoning cities.

There is another purpose embodied in such zoning that should, it would seem, find even more general approval. This is the legalizing of agreements by the abutting owners for their mutual protection. The owners of all the property in a given district may agree that all of the land therein should be used entirely for dwellings, and that a single factory or store would be fatal to the maintenance of it as a high-grade residence section. All may proceed with this understanding to build expensive residences and yet the passing of one of these properties into other hands may result in its use for some purpose that will reduce the value of all the residences by fifty per cent. One feature of the zoning system would render ef-

fective as a permanent legal restriction this mutual agreement referred to, thus guaranteeing to owners of property in a given district that money they invest in improving it shall not be at the mercy of any one or more of the owners of such property.

There is still another advantage of districting of cities. Some classes of municipal improvements are especially suitable for business districts, others for residence districts, still others for manufacturing districts, etc. If there is no segregation of such uses, but if they are intermingled throughout a considerable section of the city, such municipal undertakings must be in the nature of compromises, or else be suitable for a certain percentage of the property in a given district but unsuitable for the remainder. Merely to mention one such, pavements most suitable for residence streets would not be adapted to transporting heavy goods to and from factories, and pavements suitable for the latter service would be unnecessarily expensive and objectionable for residence districts. By the wise zoning of cities, collecting in assigned districts uses of a similar character, the difficulties just referred to are avoided and all citizens and property owners, and the taxpayers as such, are benefited.

In view of these and other advantages of districting or zoning, which are coming to be generally understood, an increasing number of cities are adopting such systems to guide their future growth, and in most cases to bring about similar conditions in the sections already built up as rapidly as may be without too great inconvenience and loss to property owners.—*Municipal Journal* (New York).

### Wages of Bricklayers

Bricklayers have been receiving wages this summer ranging from 75 cents to 90 cents an hour, with time and a half for overtime, the wages varying some in different parts of the country. In Chicago the rate agreed upon for one year from last June 1 is 81¼ cents per hour. Carpenters in Chicago have also been raised to 80 cents, which seems to be the highest price paid anywhere for carpenters.

Buy Liberty Bonds and  
Help Carry the Stars  
and Stripes Into Berlin

## *Terra Cotta In Theatre Construction*

**M**UCH of the exterior attractiveness of one of the most artistic theaters recently erected in Chicago, has been made possible through the degree of perfection to which the terra cotta art has been brought.

The new Woods Theater building, recently completed, which stands at the northwest corner of Dearborn and Randolph streets, says "The Clay Worker," is entirely finished on the outside in terra cotta, both body and trim. The product used was supplied from the factory of the American Terra Cotta and Ceramic Company at Terra Cotta, Illinois.

The new theater is a playhouse and ten story office building combined. The part which houses practically all of the auditorium and the stage runs north along Dearborn street from the office section as far as the alley. The structure is characterized by those simple graceful lines to which terra cotta is so well adapted, and as every bit of terra cotta used is of enamel finish, by simple cleaning processes (in fact for some time to come by the washing of the rains alone) it will be possible to maintain the pleasing variations in shading even in spite of the Chicago soot—which in these strenuous times reminds Chicagoans daily of visits to Pittsburgh and Cincinnati in former periods.

The ten-story portion of the building is entirely of a mottled grayish tint—the trim as well as the more solid-work. The theater proper presents a less broken surface. The body color is of amber cut into large parallelograms by broad white diagonals. The trim—and of this there is only enough to break the monotony of the wall—is of the same mottled gray finish that characterizes the office building section. The whole is topped by a mansard roof of green tile. Just above the side-walk level back near the alley is an artistic niche sheltering the replica of a bit of old French garden. Just above this, a small quaint balcony has been worked out.

All in all, this new theater is decidedly a contribution to the artistic and architectural future toward which the new Chicago is striving. Marshall & Fox were the architects, and the Longacre Construction Company, the builders, while the American Terra Cotta Company placed, as well as manufactured the terra cotta work.

There is another feature about the Woods Theater that marks a new use of terra cotta. We all remember the familiar country farm houses that one used to see all through the east and the middle west—the white frame house with the green blinds. Certainly we all remember the green blinds. Home wouldn't have been home to many a boy of the last generation without those green shutters. They swung open from all the windows except the front parlor windows

(saved from the sunlight except on Sundays) and then there were one or two other green blinds, generally one under the front gables, and one on the side of the house somewhere, and Johnnie never could quite figure where those particular windows were to be found from the inside of the house. Then came the disillusionment—they were "fake" windows, with perpetually closed blinds and nothing more. Well—Gates has got the green blinds for fake windows faded. He has gone them one better and then some. Instead of putting up shutters to hide windows that never were, he has put in French window effects—French windows that aren't French windows at all, but terra cotta panels, arranged and pointed to look like leaded glass. Perhaps it would be a little too barefaced a stunt to put over on the little white farm house, but a theater is only the home of the make-believe, the reproduction and the imitation anyhow, and it is exceedingly appropriate and very beautiful.

The most striking of these windows is under a terra cotta canopy at the north end of the Dearborn street side and directly above the French Garden niche. It is almost a story in height, and it takes a careful view to determine that if you look closely enough you will not see into a darkened room or hallway. The terra cotta is so dark it is almost black and highly glazed, and the setting and pointing has been perfect. Just to the south behind the fire escape is another similar "window" considerably shorter, and still further to the south above the opening onto the fire escape appears a handsomely panelled, but perfectly immovable transom of terra cotta.

Close observation shows that this same dark glazed terra cotta appears again and again in the trim, as the centers and panels which are surrounded in relief by the grey mottled terra cotta. This scheme completes the harmony of tone of the whole exterior.

### **Quick-Setting Mix**

To repair concrete work through which there is a seepage of water pressure, a quick-setting mix is necessary. The use of boiling water, or calcium of chloride in proportion of 8 lbs. to 10 gallons of cold water, will give desired results. Dissolve the calcium of chloride in the water before using it with the cement. Either will set the cement in from 10 to 15 minutes.

The Purchase of Liberty  
Bonds Will Shorten the War

## New Government Housing Regulations

CHANGES in the policy of the Housing Bureau of the Department of Labor, which is handling all housing questions for the Army and Navy, are stated by Mr. Otto M. Eidlitz as follows:

"The plan of organization approved by me May 4, 1918, shall continue in effect until otherwise directed, except that there shall be associated with the director a representative of the War Department, a representative of the Shipping Board, who shall be known as Associate Directors. They shall advise the Director on behalf of their respective departments or board.

"There shall be organized a management division, which shall undertake the management of the properties erected by the Government, and also a division of existent housing, which will deal with the question of utilizing all of the housing and boarding facilities of each community in order to reduce to a minimum the need for Government housing.

"The Government will build, own, control and rent the houses until after the war.

"The houses erected in established communities shall be of a permanent character, except where Congress has otherwise stipulated.

"Houses erected in communities that are not likely to continue in existence after the war shall be of a temporary character, but such temporary buildings must, of course, provide for the comfort of the occupants.

"Loans will only be advanced for the erection of dormitories to responsible corporations or associations not organized for profit, and then only after most careful consideration of the advantages to be gained thereby.

"In fixing rentals the following factors will have to be taken into account:

"Fixed charges.

"Interest on investment.

"Insurance.

"Reserves for upkeep of rented houses.

"Repairs.

"Renovating and redecorating.

"Reserve for loss in case of non-occupancy.

"Overhead expenses of administration.

"Depreciation."

## Getting Brick Lore to Lumber Dealers

WHILE the lumber producer will not profess much interest in brick—except when he needs a really modern dry-kiln building—the lumber dealers, the retailers, are taking more interest in the subject each year. And incidentally some of the lumber papers are helping to carry brick lore to the dealers. An interesting case in point is a feature article in one of the papers going to retailers, by an architect, which

deals at some length with the matter of brick and how to use them. It includes a brief description of the different methods of making brick, illustration of different mortar joints used in laying brick, a statement of brick sizes and a table showing the number of brick required for walls of different thickness. It is a bit of good work that shows the way the wind is blowing in the building and building material line. Also it carries the hint that the brick manufacturers themselves may help the cause along by getting in closer touch both with the lumber dealers and the building contractors, and putting before them in attractive form just such information as this. Getting brick lore to dealers and to builders is half the battle for wider brick progress in everyday building operations, and a little seed planting in this ground now will help enlarge the harvest to come when the war is over.—*The Clayworker*.

## Due to the "High Price of Lumber"

IN explanation of the unusual activity of its plant during the past summer one of the smaller manufacturers of hollow tile in the Northwest, said it was due "to the extraordinary high price of lumber."

Here is a suggestion that manufacturers of building clay products should take advantage of to a far greater degree than they are now doing. The war has made unusual demands upon the lumber supply of the country, and this has forced prices upon the limited quantity available for private use to extravagant figures, particularly upon the seasoned grades of timber.

Compared to the increase in lumber the advance in the cost of brick, terra cotta and cement has been very modest, and as a rule the latter material can be had without serious delay.

Because of these important considerations the many advantages possessed by masonry over lumber as permanent building material should be stressed as never before, and the building public thus educated along lines desirable both for their individual and for the general good.

## Frame Construction at New Brunswick

FRAME construction in the mercantile district of New Brunswick, N. J., according to the engineers of the National Board of Fire Underwriters, constitutes a dangerous fire hazard to the community, which is but partly modified by the generally low height of the buildings.

So long as wooden structures are permitted in the populous sections of our cities or towns, just so long will the fire menace exist, and the taxpayers be called upon for heavy contributions to maintain proper fire-fighting equipment.



## Cover Your Plant with a 20-Year Guaranty Roof—

*Barrett 20-Year Specification Roof on plant of E. R. Durkee & Co., Elmhurst, N. Y. Architect: Russell G. Cory, New York City. General Contractors: Industrial Engineering Co., New York City. Roofing Contractors: New York Roofing Co., New York City.*

Of course your plant and its contents are insured.

But did you know that you could have your roof insured against maintenance expense for twenty years *without paying a single premium?*

This is how it is done:

On all Barrett Roofs of fifty squares or more, in cities of 25,000 or more, in the United States and Canada, we offer a 20-Year Surety Bond issued by the U. S. Fidelity & Guaranty Company of Baltimore, provided the job is done by a roofing contractor satisfactory to us and constructed under our supervision.

This bond exempts building owners from all repair and maintenance expense to the roof for a period of twenty years.

We know, through long experience, that a roof constructed strictly according to The

Barrett Specification will, in most cases, last *nearer thirty years.*

The principal architects, engineers, and roofing contractors throughout the country are familiar with the plan and are co-operating with us.

If you will consult them about your roofing needs we are sure they will recommend a Barrett Specification Roof, because today it is the standard covering for permanent structures of all kinds.

If you wish any further information regarding this Guaranty, a line to our nearest office will bring it.

*A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.*

### The Barrett Company

New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Cincinnati, Pittsburgh, Detroit, Birmingham, Kansas City, Minneapolis, Nashville, Salt Lake City, Seattle, Peoria, Atlanta, Duluth, Milwaukee, Bangor, Washington, Johnstown, Lebanon, Youngstown, Toledo, Columbus, Richmond, Latrobe, Bethlehem, Elizabeth, Buffalo, Baltimore.

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### Building Operations in 1917

**D**ETAILS of the record of 1917 building operations which are now available through press bulletins of the U. S. Geological Survey give a pretty good idea of war's effect on the trend of building. Among 60 cities of the country taken for analysis 48 showed decreases while 12 showed an increase in building operations.

The dozen cities in which building operations increased, as compared to 1916, were: Waterbury, Conn.; Akron, Ohio; Atlanta, Ga.; Chester, Pa.; Denver, Colo.; El Paso, Tex.; Hartford, Conn.; Omaha, Neb.; Sioux City, Iowa; Youngstown, Ohio. The causes for the increases were local in each case, being due to war activities of one kind and another in the main.

Taking 145 cities the total building operations reported for 1917 amounted to \$687,415,605, as compared to a little more than a billion dollars for the same cities in 1916. There is some comfort in the situation for the clayworking industry, however, in that the larger part of the building was of brick.

Among the cities reporting 129 stated operations by classes of structures. The total cost of buildings in these 129 cities was \$632,694,952. The part of this expended on wooden buildings was \$168,290,958, or 27 per cent; on brick and hollow tile buildings, \$322,147,677, or 51 per cent; on stone buildings, \$4,589,168, or less than one per cent; on concrete buildings, \$66,511,300, or 11 per cent; steel skeleton buildings \$58,440,361, or 9 per cent. So the brick industry not only led the list, but lost less comparatively than any other building material. This is one of the things to be thankful for, and to cheer up about.

And, another cheerful thing is in the prospects that instead of losing in the future there will be a steady gain in the call for brick and hollow tile—more of it will be used in proportion to the building operations carried on. And it is easily apparent that there will be enough of the call right along that the main problem will be how to get enough made to supply the actual needs.

### Building the Biggest Shipyard on the Pacific Coast

**T**HE magnitude of the twenty-million dollar shipyard which the Aberthaw Construction Company, of Boston, Mass., is erecting for the Bethlehem Shipbuilding Corporation at Alameda, Cal., on a tract a mile long by nearly half-a-mile wide, is revealed by the following figures.

The aggregate floor area of the twenty-three principal buildings will be thirty-and-a-half acres. Among these will be the plate and angle shop of five-and-five-eighths acres ground area, a five story warehouse with about half this acreage in floor area, and a five-story office building with a total of well over an acre

of floor space. Many of the other buildings, among which are the iron and brass foundries, the mold loft, the sheet metal, pipe and joiner shops and power house, range from 30,000 to 100,000 sq. ft. in floor area.

The construction of all the buildings and the ten building slips calls for about 3,000,000 feet of hard pine, over a million-and-a-half square feet of sash, about 700,000 square feet of gypsum roofing, 8,000 tons of structural steel, and 100,000 barrels of cement. Over 70,000 wood piles will be driven and from three to four million cubic yards of dredging will be required. The Aberthaw Company will employ more than 15,000 men on this construction.

### Housing Shipworkers in Philadelphia District

**A.** MERRITT TAYLOR, director of housing for the Emergency Fleet Corporation has announced that model houses and apartments sufficient to accommodate 18,305 shipyard employes will be completed in the Philadelphia district alone. Those that are under construction include the following:

At Bristol, 208 houses, 24 apartments, 42 bunk-houses and 14 boarding houses.

At Camden, 2,007 houses.

At Gloucester, 550 houses.

For Hog Island, 1,460 houses and 4 dormitories.

At Essington, 200 houses and 1 dormitory.

At North Chester, 622 houses.

At South Chester, 277 houses, 1 dormitory and 23 apartment houses.

At Wilmington, 506 houses and 3 apartment houses.

"Substantially all of these housing developments are of a permanent character," says Director Taylor, "and have been designed as model villages by leading architects of the country. Every precaution has been taken in the establishment of these new homes to make them substantial, permanent and popular places of residence for shipyard workers.

"The houses, built mostly of brick, are of artistic and comfortable design and front on broad, beautifully laid out and substantially constructed avenues. All of these developments will have complete sewerage system, and the usual public utility service.

"The Government town planners have carefully provided the necessary facilities for recreation, which are so essential to the comfort and convenience of not only the shipyard workers, but for the welfare, comfort and happiness of their families—especially the children.

"These new towns, which have been financed by the Emergency Fleet Corporation as an agency of the Government, and which are being constructed, will establish a new standard for workingmen's homes in America."



#### Hexagonal Method

The hexagonal or "honey-comb" method of applying Johns-Manville Asbestos Shingles in the  $\frac{1}{4}$  inch thickness is cheaper than the American method and much more artistic than the diagonal method. The hexagonal method apparently shows six sides of the shingle, thus overcoming the objection to severely straight lines.

# JOHNS-MANVILLE

## FIRE PROOF

# ASBESTOS SHINGLES



*Fireproof—beautiful—lasting—inexpensive*  
*What more could you have in a Shingle?*

**I**F you are delaying re-roofing now because of high prices, investigate Johns-Manville Transite Asbestos Shingles. They, of all home roofings, have not materially increased in cost—in spite of their unusual value. Roof or re-roof now, before shipment becomes more difficult; while they are yet less expensive than more common types of residence roofings. Get a fire-proof—beautiful—lasting—inexpensive roof.

#### Many Kinds to Choose From

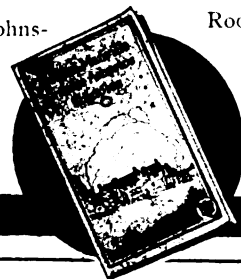
Johns-Manville Transite Asbestos Shingles are made in styles and shapes and sizes to meet the needs of the architect, the owner and the builder. You can get  $\frac{1}{4}$  in. and  $\frac{1}{8}$  in. thicknesses in gray, Indian red and mottled brown, with rough or smooth edges, square or hexagonal shape.

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*Send for this*

*book of facts*

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#### Approved by the Underwriters' Laboratories, Inc.

Under the direction of the National Board of Fire Underwriters, Johns-Manville Asbestos Shingles have been examined and approved.

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Roofing problems vary—this book tells how; yours may be unique—it will help to solve it. Don't spend money for roofing until you get these facts before you. Send for it now—to the nearest branch.



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Apply one course of No. 5139 18-in. shingles at eaves lengthwise and parallel, overlapping eaves about  $\frac{1}{2}$  inch. Apply second course, entirely covering first course, breaking joints; after which proceed in the regular manner as with wooden shingles or slate, exposing seven inches to the weather. Never drive nails down tight, it is only necessary to drive them firmly as with slate.

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New York City

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THE TECHNICAL FIRESAFE BUILDING PUBLICATION

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**WEATHER:**

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# The Fireproofing News

CONTAINING DETAILED DESCRIPTIONS OF NEW DEVICES AND APPLICATIONS OF MATERIALS WHICH ARE OF REAL VALUE IN FIRESAFE BUILDING; ALSO NOTES ON THE LATEST BOOKLETS, CATALOGS AND OTHER FIRESAFE LITERATURE, WITH OTHER ITEMS OF INTEREST TO THE FIREPROOFING FRATERNITY

**LATEST  
EDITION**

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New York City, N. Y., September, 1918

**Priceless**

## Attitude of Government Authorities Toward Building Construction

There is every indication that the present policy of the Federal Government toward building construction throughout the country, will be modified in the near future, and that greater liberality in such connection will be permitted.

Property-owners and builders, as well as architects and supply men have cheerfully acquiesced in every regulation or suggestion of the authorities concerning the need for husbanding resources both of labor and material, though such compliance has oftentimes meant the practical suspension of operations.

Late advices from Washington, according to the Dow Service, "indicate that a zone system for labor would be established for distribution of man-power not employed directly in war munition manufacture when the peak of the Government's war construction program had been reached, which, it was said, would probably not be longer than three to six months. In such event an important step forward in solving the labor problem will have been made, according to building interests.

### New York Situation

"At the same time assurances were given that modification of rules concerning building construction of an essential character might be considered 'within the very near future' as the result of revelations of the quantity of building construction work of a reasonably essential character that has been held back because of the necessity of permitting even more important construction work to proceed. It was shown that in New York City alone there is at least \$94,000,000 worth of essential building work ready to be submitted to the Mayor's Committee for permission to proceed, and about \$115,000,000 additional being held back by architects that had not reached the stage for estimates when the war stringency prompted owners to defer

work. None of this work represents 'speculative' building, but actual building work that would place in a short time available rental space for business and war workers.

"It is shown that the lack of rentable space is so acute in New York that the Government, after ordering the commandeering of certain loft buildings, had to officially rescind the orders because the tenants simply could not find adaptable space elsewhere, and it would have meant practical Government confiscation to have dispossessed them.

"Washington was considerably surprised at the volume of protest that was registered there in relation to the terms imposed upon building interests by 'Circular No. 21,' addressed to all manufacturers, distributors and dealers of building materials, making them responsible for the ultimate uses to which all materials sold by them were put, and it was said that no conception existed as to the extremely acute situation prevailing with relation to building material manufacture and distribution in the large metropolitan districts of the East. In many cases the pledges were signed through fear of being considered unpatriotic, but it meant in many cases, almost total cessation of business because the manufacturers placed the full burden of responsibility upon the dealer, who did not have the means of scrutinizing every job and who therefore actually was forced to refuse business."

Of high value to builders is the catalogue of clay working machinery lately issued by the American Clay Machinery Company, of Bucyrus, Ohio.

Rex products, their composition and manifold uses are described in the latest catalogue of the Flintcota Manufacturing Company of Boston.

## Beware of Defective Heating and Lighting Equipment

With the approach of the winter season a warning has been issued by the New York Board of Fire Underwriters to owners or managers of private or public buildings to guard carefully the fire hazard. Attention is especially directed to the heating and lighting equipment, which should be thoroughly overhauled and any defects promptly repaired.

### Building and Fire Bureau

Probably the largest city in the country where the fire department acts also as the building inspection department is Superior, Wis. Superior is a city of about 45,000 people. Its fire department is headed by Olaf Johnson, now on leave of absence and in the Federal service as special fire marshal.

Fire Chief Johnson has been the leading spirit in obtaining motorization of the Superior fire department, which has proceeded until all of the apparatus in that city is motorized except at one station. In addition to carrying on this work with the fire department organization, Fire Chief Johnson has taken care of the building inspection work. In his annual report for 1917 Chief Johnson notes that structural conditions have been improved in the last few years in Superior and that greater progress may be looked for in the immediate future. Superior construction has resulted in a decrease in the number of fires and also a decrease in the loss. The total loss in Superior last year was \$134,196.

The many advantages of concrete in industrial home building is described in an attractively illustrated booklet put forth by the Lambie Concrete House Corporation, 52 State street, Boston.

An illustrated booklet, descriptive of its service, has been published by the Aero Fire Alarm Company, 26 Cortland street, New York City.

## The Fireproofing News

### In Industrial Housing

Low first cost often means a big ultimate loss. Consider fire risk with its bearing on insurance rates.

*Consider upkeep and depreciation.*

### Berger's Expanded Metal Lath

Used as a base for plaster and stucco gives fire-resistance, permanence and freedom from cracking. Such construction is attractive in appearance and sanitary. Upkeep is reduced to a minimum, for stucco needs no paint. In this connection read the following clipping from the literature of a prominent paint manufacturer:

Statistics show that losses through lack of paint in this country yearly are greater than losses by fire. Over \$200,000,000 is spent annually on paint in the United States and most of the money is for building preservation. Don't forget that—

Wood, unless painted, quickly absorbs moisture and then becomes warped. Soon the building joints begin to crack under the ravages of sleet, rain and snow. Next, the moisture seeps through the plaster. Your home suddenly is an unsanitary, health-menacing place in which to live. By looking ahead a little—

Ask for our Metal Lath Handbook F-19



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### The Smaller Contractor Can Get Industrial Housing Business

Housing for factory employees, or industrial housing, as it is generally called, forms one of the big present day outlets for building activity. Industrial housing, war-time factories, farm buildings and repair work are undoubtedly the real sources to-day for business in the building field.

There is absolutely no reason why the small town contractor should not get his share of the industrial housing business if there is any to be had in his particular locality. He is often an expert in small house construction, knowing far more of its problems than does the big city engineer who never designed or built a house until the country's necessity made it the popular thing to do—and the only big source of business. The local contractor who goes out after the town's business knows labor and material conditions in his locality; he knows which of the other local

builders and their employees he can readily hire for a patriotic duty. The small town builder often does much of his own work; he can do so now, if labor conditions make it necessary, and induce other builders to co-operate with him to their mutual advantage.

The local man knows just what materials he can get. Therefore he can adapt his work to what is available. If necessary, he can generally put his hands on second-hand material. In general, his acquaintance with local conditions should enable him to do a better job than the big city man, if he has the requisite knowledge and ability.

One of the articles in this issue will give you ideas as to how you can sell your construction abilities to factory owners in need of housing accommodations for their employees. Another article shows you some points which should enable you to finance small housing operations of your own. Still another article points out some of the fea-

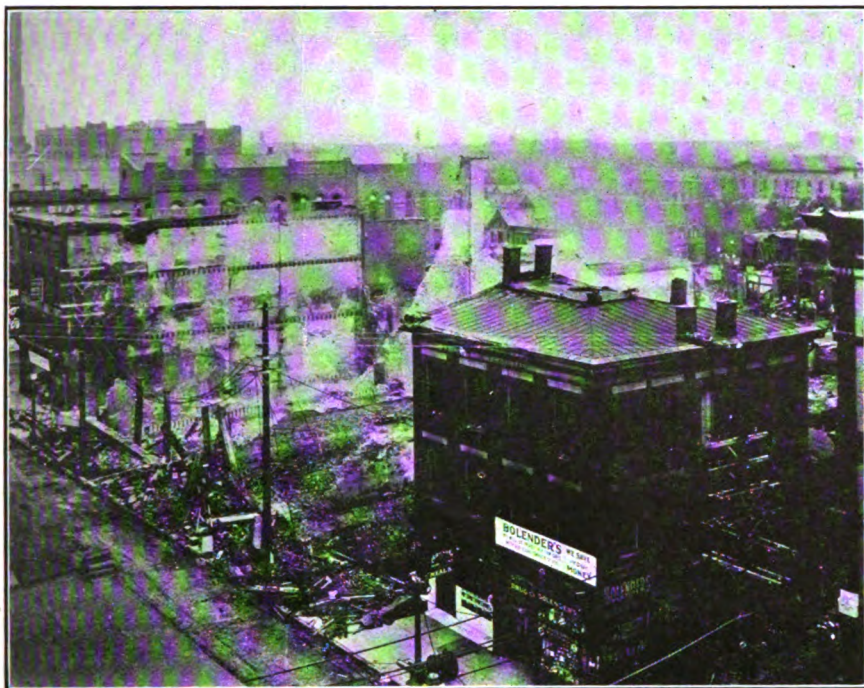
tures to be observed in planning such houses. In the supplement a wealth of illustrations of the best work done so far should enable you to meet off-hand many of the problems that may arise.

Be one of the men who get some of this work. It's entirely possible if you go about getting it with enthusiasm and the determination to stick until you get it.

### Chargeable to Wood Shingle Roofs

Fulton, S. D., had an experience with wood shingle roofs its citizens are not likely to forget in a hurry. Starting upon the platform of the railway station the fire burned fiercely, flying embers being carried to all parts of the city. Before its extinguishment the fire had destroyed over thirty buildings, mercantile and residential, the great majority of which were of frame construction and covered with dangerous wood shingle roofs.





Protected from Fire Damage—Striking Example of the Fire Resistive Qualities of Berger Metal Lath

### Dealer's Opportunity to Work for First Half of Year

Every person belonging to an organization of any kind should read the address of President Harry A. Wheeler of the Chamber of Commerce of the United States, delivered at the National convention held at Atlantic City in July.

At this convention there was formed a permanent organization known as the National Federation of Building Industry. Mr. Wheeler knows organization work and the following paragraphs from his address should be pasted in front of every organization man where he may see them daily.

"Your industry, because of its ramifications, presents more problems than any industry that we have yet undertaken to counsel with in connection with organization; but problems are solvable in these times, and men's minds are working curiously toward a common and co-operative end, and differences of opinion and jealousies and suspicions are dropping off like a coat that is discarded; and American business is standing forth as a unit as it never has done in the history of the nation.

"Unless we stand together in spirit, as well as in name, our own interests are going to suffer and the nation with them will suffer, or the nation is going to suffer and our interest will go down into disintegration with the suffering of the nation. And the time has come

when men must divest themselves of their old ideas, of their old opinions of their neighbors and competitors, of their old opinions of organizations that existed in their trades, and stand together shoulder to shoulder with a common purpose for a common end, in order that business may be preserved and our warfare may be successfully continued.

"I have no doubt that there are jealousies within your trade, as there are jealousies in every other; that there are antagonisms, born of good cause, probably, in the days that are past because of wrongs that have been suffered or imagined and because of conditions that have not met with the actual feeling that they are all right and all sound or honest and purposeful in their general result.

"Won't you, no matter what may be your previous notion of your competitors or of others in other lines of trade, no matter what grievances you may have suffered, no matter what jealousies may have existed, no matter what suspicions may have at some time crept in as between the industries, won't you this morning cast them aside, accept each other for one hundred per cent. honest purpose to perform a great patriotic deed in this convention, forget the past and stop looking backward, and look only ahead to the days that are before us, days in which we have enough of suffering and

enough of difficulty so that we cannot afford to harbor any ill-will or any ill-feeling or any unwise counsel with respect to past actions, but only looking out into the future for the thing that will be best for the nation as a whole.

"The days that are coming are going to be days of victory; victory for men over themselves; victory for industries over their selfish purposes; victory for organizations when they are compelled to lay sacrifices necessary to the winning of the war; and victory for humanity because of those sacrifices that are made. American business, when its story in its relation to this war is written, will find itself proud of what it has done to bring about the ultimate result."—The Co-operator.

### Chimney Inspection

The city of Davenport, Iowa, has instituted a thorough inspection of its chimneys. A start was made early in the year in order to give ample time for repairs before the next winter season. According to a report made by the fire commissioner and building commissioner before the inspection was completed, 165 cases had already been discovered in which overhauling or repairs were needed in the interests of safety and efficiency. Davenport deserves great credit for taking this problem so energetically in hand. May many other cities do likewise!

### Uncle Sam's Fire Loss Reduced for First Half of Year

Although the fire loss in the United States for the first six months of 1918 was \$5,000,000 less than during the corresponding period in 1917, there is little satisfaction in knowing that the loss for the first half of this year reached the enormous total of \$129,284,460.

The total is \$19,000,000 more than for the first six months of 1916, and if the ratio of losses were to be maintained for the last half of this year the loss will reach \$260,000,000.

June was the heaviest month, the losses for that 30-day period in the United States reaching \$22,571,850. An unusually large number of fires damaged property being used for war purposes. Part of this seeming increase in the number of war industry fires is accounted for in the Journal of Commerce, by reason of the great expansion of plants being used for war purposes.



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consistent presentation—in season and out—of your product in CONSTRUCTION cannot fail to result favorably because the success of this publication depends upon

- (1) how well it advances and proves the argument for proper fireproofing and
- (2) what it actually accomplishes to increase the use of firesafe materials and devices.

The first objective is attained (intensively) through the editorial, news and advertising sections of CONSTRUCTION and (extensively) by sending the magazine over the entire country to all the business and professional interests related to building, planning, construction, equipment and maintenance.

The second purpose is accomplished by actively fighting for legislation favoring firesafe construction and against laws permitting the continued use of wood—and remember that no company can do this work as effectively as a publication, that the "fireproofing fraternity" at present is a composite unorganized body comprising a number of separate units representing more than a dozen industries, that there is practical need of a national mouthpiece such as you have in CONSTRUCTION, that makers of fireproof materials are now getting but one per cent. of the business which ought to be theirs, that advertising in CONSTRUCTION is helping yourself to get more orders, giving your goods the representation they deserve—and according to this publication the co-operation it merits.

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If your dealer cannot supply you write the factory.

H. M. Reynolds Shingle Co.

"Originators of the Asphalt Shingle"  
GRAND RAPIDS MICHIGAN





# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

George A. Watson, Editor  
Bruce E. Loomis, Ins. Eng. Editor

Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

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L. C. Watson, Sec.-Treas.

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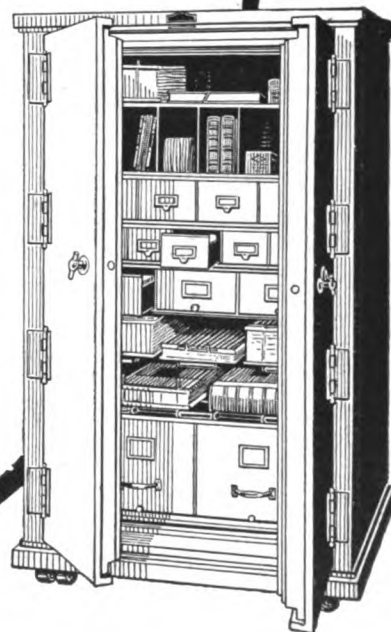
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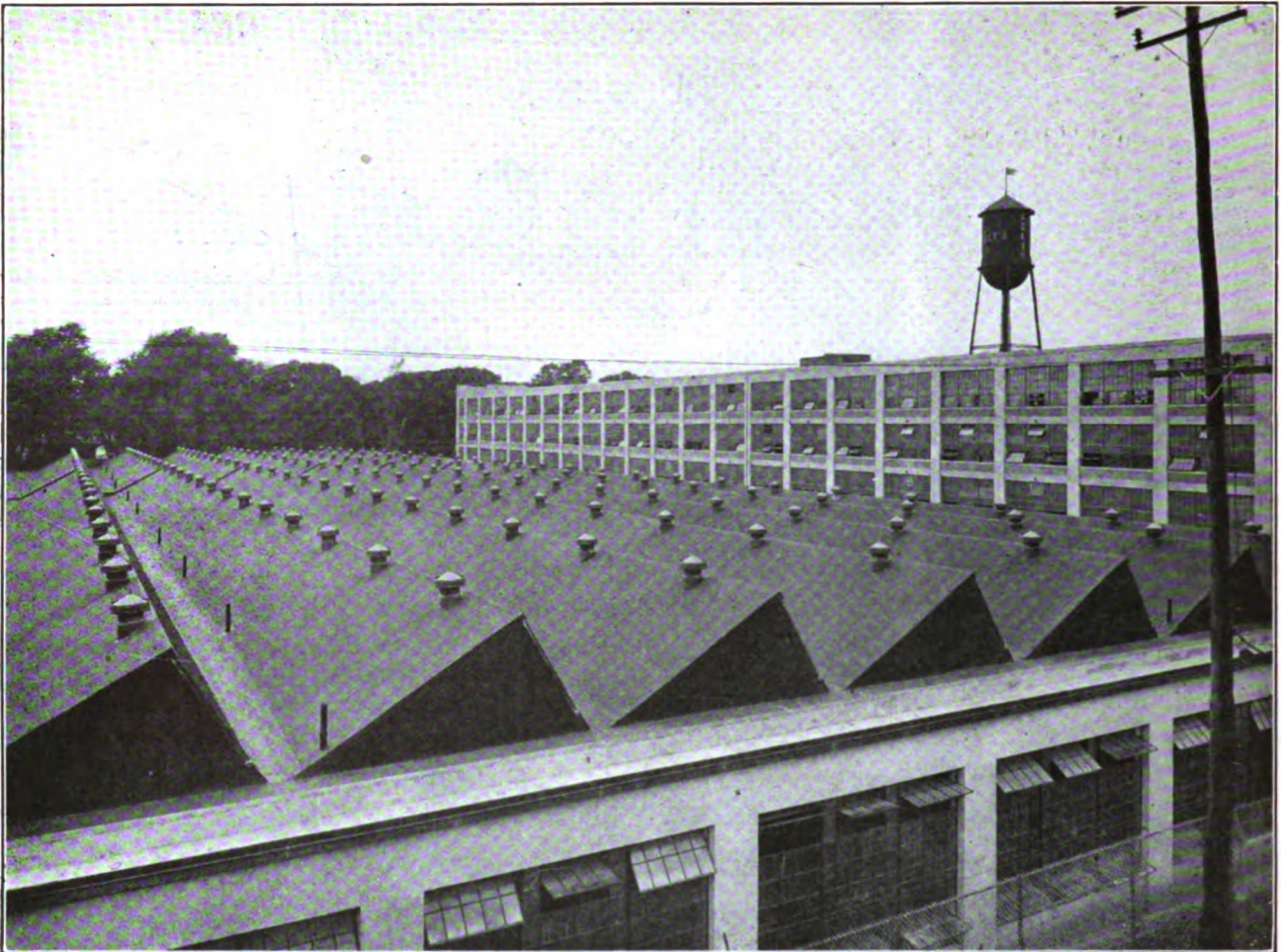
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

VOL. VII

OCTOBER, 1918

No. 4

## Repair Work Should Be Sought

WHILE the prohibition of the Government against the construction of new buildings not essential to winning the war has naturally greatly reduced the volume of building operations throughout the country, it has by no means eliminated all opportunity for work by wide-awake contractors. Instead it has simply changed the avenues of activity of the latter who now seek repair work instead of centering exclusively upon new construction.

And in casting about for opportunities for repairing properties contractors have been surprised at the amount of such work to be had if it be intelligently and industriously sought. Many an owner of a mercantile building or residence property has been induced to modernize his holding when shown how greatly it could be improved through a comparatively modest expenditure. To induce work of this character a sketch of the proposed improvement should be prepared and its cost carefully figured before the prospect is approached. In addition the contractor should calculate as nearly as possible the increased rental return that might reasonably be expected from the renovated property; thereby emphasizing the financial as well as the esthetic advantages of the suggested changes.

Well directed efforts along the lines above recommended will not only produce a considerable amount of immediate business for the contractors, who would otherwise have little if anything to do, but in many instances it will pave the way for larger and more profitable engagements when conditions in the building world return to normal.

## War Contracts and Housing

HOUSING and transportation conditions have become so congested in some sixty towns and cities where war supplies are being manufactured, says the *Manufacturers' News*, that the General Staff has advised all of the War Department's supply bureaus to give careful consideration to local conditions before placing further contracts. In each of the sixty

towns, the bureau of industrial housing of the Labor Department has found it necessary to make provision to expend Federal appropriations in order to relieve shortage of housing and transportation.

At the present time, it is found that the extreme congestion of living conditions in some localities is so great that the use of beds, three shifts a day, has become imperative. This condition has created an exceedingly high labor turnover which has made for increased cost and delay in the completion of work. The General Staff will see to it that the placing of contracts in these points is reduced to the minimum and has especially instructed the quartermaster corps to avoid these points because of the relative flexibility of their contracts. It is not the object to cut off new orders in the towns named, but to regulate them. Where it is a question of new plants requiring additional power, additional labor or the building of new structures, or the need of largely increased facilities, the disposition is to discourage such increases and to develop such new industries outside of the districts mentioned.

## Menace of Fire to Public School Buildings

IN the opinion of Senator George D. House, chairman of the Massachusetts Legislative Recess Committee on Education "there should be a better understanding between the State police and the Massachusetts Department of Education as to methods of protecting school-houses from fire hazard. Members of the Commission have found the inspection is not as thorough as it should be and will probably recommend legislation further to protect the school children against fire peril."

Next to hospitals there is no class of buildings against which the fire menace should be guarded more than public schools. Occupied in large part by young children easily frightened, school buildings should be made as nearly fire proof and panic proof as it is possible to make them. And firesafe construction is so well understood at the present time that no justifiable excuse can be offered for building in any other way.

## *Building As An Index of Human Activities*

**"MODERN BUILDING"** argues and with admirable basis of truth that progress in building operations furnishes an admirable index to all human activities. "Some day," the paper asserts, "a statistician with a vision will show that in the height of business prosperity building activity reaches its high point; that the building industry, using as it does practically every kind of material and employing skilled and unskilled labor in large numbers, is really a more dependable index of conditions than any special industry which may be affected by its own peculiarities.

"And our imaginary statistician will carry his comparisons still farther. He will show how the nature of the building is the real measure of the public interests. When the building of homes predominates, it indicates the contented thrifty disposition of the earners. The building of factories shows industrial activity, offices and stores, the growth of commerce, buildings in small towns, progress in farming, etc., and schools, libraries and public buildings, a desire for education and increase in civic interest. He would probably go so far as to show that our whole life is manifested in types of building construction—from the cradle, when we start with building blocks, to the mausoleum where rest our remains.

"In the absence of our full array of statistics, it is interesting to note the building tendencies in recent years as reflecting world-wide and national conditions. When the war started in 1914, business conditions were in a turmoil and a state of depression ensued. Immediately new building construction came to a standstill, and the fall and winter of 1914-1915 represented the smallest volume of building in many years.

"But an upward tendency in business started soon afterwards. War orders had come to this country and industry became generally employed. New buildings were required for industrial expansion and the large amount of money earned sought permanent investment in buildings of all types. This era of growing building activity in all lines continued until the period of our entrance into the World War. We in America found it suddenly necessary to maintain and equip an army of millions in record time. Immense training camps and Government buildings of all kinds were needed at once. Manufacturers and producers generally were given Government orders of undreamed-of-size.

"Building construction immediately accommodated itself to the situation. First we see the large contractors, some of them principally used to building skyscrapers, suddenly organizing all their forces into the construction of cantonments and Government

buildings of all kinds. In recent times manufacturers have found it absolutely necessary to have more space to take care of their vast orders so that at the present time industrial building is the principal construction activity. The shifting of employes to new industries is reflected in the industrial housing projects going ahead in many communities.

"What are the indications for the future? Just now manufacturers are getting into the pace of their increased production, and soon will be producing their war orders as a matter of course with even a margin left for civilian products, so that there will probably be a tendency to drop off in the tremendous industrial construction that has been going on.

"The next problem confronting the country—and it has been a problem for some time—is transportation, and there is every reason to believe that the next large field of construction activity will be in the lines of railroad work generally. In fact, our Government has already authorized immense sums of money to get this railroad construction under way. After that, and along with it, there will be an opportunity to take up and carry through the many building projects of civil and public nature which have had to be postponed.

"Thus building has been in the past, and will continue to be in the future, an accurate gauge of conditions generally."

### **Asbestos Roofing on Steel Framework**

**A** VERY satisfactory fireproof roof construction has been made by the use of steel framing covered with corrugated asbestos sheathing. An example is a building erected for the Read Phosphate Company at Nashville, Tenn. It is 510 feet long and 10 feet wide, constructed entirely with steel framing and corrugated asbestos sheathing. Both the sides and roof are covered with this sheathing. In the construction of this building, 1,700 squares of sheathing were used and the building was erected by the Nashville Bridge Company between September 14, 1917, and November 25, 1917. This building has been used continually ever since its completion.

Mr. Read constructed the building of this material after seeing two buildings housing his business burn down in seven years. These two fires, the added security of improved construction and the saving in insurance premiums by reason of superior fire resistive construction led to the building of the structure. The extra cost of this building over frame buildings, ordinarily roofed, formerly used, was in reality a saving for the Read Phosphate Company since the saving in insurance premiums more than pays the interest on this extra cost.—"The American Roofer."

## Our Country's Fire Loss

**W**ERE you ever in a burning house? Can you possibly forget it? Even though the fire may have been put out before it did much damage, you remember the excitement and fear. If you were old enough to realize the danger, you will never again care to pass through such a terrible experience.

You have never been in a burning house, do you say? That is fortunate, but at least you have seen fires and can plainly recall the clouds of smoke and the fierce crackle of the flames, as they spread and destroyed everything within reach. You may have noticed the people who escaped; do you remember their grief as they saw their home and comforts, their clothing, furniture, pictures, books, and the treasures that they had been gathering for so many years, suddenly swept away?

It is to be hoped that you have never seen a fire in which people have lost their lives, or have been badly injured—but these, too, often occur. They happen without warning, at points where they are least expected. People who have been going about their daily tasks without a thought of danger may suddenly find their escape cut off by flames that have been caused by somebody's carelessness. In order that such a terrible thing may never happen through our carelessness, let us try to learn some things about fire, and especially about the ways in which it may be kept from becoming dangerous.

### Fires and the Clock

Here is a good way to begin: Stand in front of a clock and watch the long hand creep steadily from minute to minute. Every time it passes a minute mark, say to yourself: "Another fire has broken out; perhaps somebody's dearly-loved home is being destroyed or some child is being terribly burned—"; then add, "*It could have been prevented.*"

Watch that clock hand for ten minutes or more—"another fire"—"another"—"somebody's home"—"some boy or girl"—"some hotel, with the people struggling to escape"—"some factory, with dozens of hands thrown out of work"—"another"—"another." That is the way it goes, minute by minute, night and day, throughout the year. When you wake up in the morning, you may be sure that there will be hundreds of fires throughout the country before night; when you go to sleep at night, it is pretty certain that there will be hundreds of fires somewhere in the United States before morning. If some minutes go by without a fire, others may have two or three, for there are 1,440 minutes in the twenty-four hours, and each day has an average of more than 1,500 fires.

There will be 1,500 more fires to-morrow, another 1,500 day after to-morrow, and so on, sometimes a few more and sometimes a few less, but *averaging* pretty close to 1,500 for each day. Think of it—these fires haven't yet occurred, and *they wouldn't occur* if people only would be careful.

### Gold+Silver+Copper+Petroleum="Fire=Tax"

And it is not merely the *number* of these fires that is shocking—remember the terrific amount of damage that they do! A few years ago one of the departments of the United States government\* spent a large amount of time getting together figures and comparisons about this damage. Some of the things shown were really startling. For example, the report stated that the United States "fire-tax" (meaning the direct cost of the fire damage, and the other costs that are indirectly due to fire) is greater than the combined value of the production of all our gold mines, silver mines, copper mines, and oil wells. This was bad enough, but the report went on to say that this same "fire-tax is greater than the value of all of the land and improvements in any one of these states: Maine, West Virginia, North Carolina, North Dakota, South Dakota, Alabama, Louisiana, or Montana." When you come to think of it, it is almost as though one of these great states were fed into the fire every year.

Then, to make us understand it in still another way, the report added that the amount which might be saved if people would really take proper precautions would be "nearly enough to build a Panama Canal each year."

But perhaps the strongest statement of all was made in an address by Charles Whiting Baker. This gives us a picture that we can almost see:

### A Street of Desolation

"The buildings consumed, if placed on lots of 65 feet frontage, would line both sides of a street extending from New York to Chicago. A person journeying along this street of desolation would pass in every thousand feet a ruin from which an injured person was taken. At every three-quarters of a mile in this journey he would encounter the charred remains of a human being who had been burned to death."

All of this means a good deal to boys and girls, for two reasons. In the first place, it is important for them to think of themselves as citizens, because in a few years they, themselves, will be owning the property, and paying the taxes of the nation; and, in the second place, while yet children, they can perform a wonderful service in saving their homes and neighborhoods from much of this loss.

\*Report of the U. S. Geological Survey (1909).

## Significant Charges In Business Management

THE *American Machinist*, in introducing some special correspondence on the above subject, says: "The war has brought many changes, but none which seems destined to play a larger part in future development than the changing relations between capital and labor. Those who have studied the question seriously believe it is necessary for progressive business men to join hands with the more conservative labor men in working out a sane and rational labor policy. Unless this is done, grave consequences may follow. Conservative thinkers like Justice Hughes and ex-President Taft believe that it is necessary to change many of our ideas regarding industrial relationships."

The *American Machinist* then goes on to say that no one who is interested in the welfare of the country, and that means every right-thinking individual in any walk of life, can afford to overlook the relations between capital and labor in all parts of the world. We can gain nothing by shutting our eyes to the facts—and we may lose much.

The report of the Federal Commission of Mediation shows plainly that we are facing a new era, and the report may be summed up in six counts:

1. The elimination of profiteering during the war as absolutely necessary to the morale of industry.
2. A form of collective relationship between management and men (and they advocate the recognition of this principle by the Government as a part of the labor policy of the nation).
3. The adoption of the eight-hour day with suitable remuneration for overtime.
4. A single-headed labor administration with full power to establish the necessary organization. This is already under way, with Secretary Wilson as its nominal head.
5. The education of labor to the causes and aims of the war and in the broader relationships with capital.
6. The education of employers to the essentials of the modern labor policy and its broader relations with its employees.

The *American Machinist* also adds that there may also be something significant in the new laws of Maryland and New Jersey, which make idleness of healthy adults a crime unless it is temporary as the result of some labor dispute. Production is the order of the day, and we may be sure that the workers will not see this law enforced against them and not against those who have no visible means of support but a bank account.

Both sides must understand that all who work and assist production must be classed as labor, whether

they also have a capital invested or not, and that those who invest only capital and do not assist in production deserve far less return than those who actually assist in production, no matter in what capacity.

There are men who understand capital and business thoroughly, but who have come to think of their business as a strictly private affair, which privileges them to do exactly as they please without regard to the effect on the community or on its individual members. They very seldom use the pronoun "we"; they always use the pronoun "I," and the bigger they can make the "I," the better pleased they seem to be. They speak of "my note," "my factory," "my men," "my salesmen"; and when they deal with their men, it is always "I will" or "I won't."

### Five-year Loss in Kansas is Twenty Millions

IF the buildings in Kansas in which fires have occurred in the past five years were set in a row on fifty-foot lots they would line solidly one side of a street extending from Topeka to the Oklahoma border, two-thirds of the way across the state, or, if grouped together, they would make a city as large as Wichita.

The total property for that period runs in the neighborhood of twenty million dollars, caused by over fifteen thousand fires.

The figures for the five years are as follows:

| Year       | Number of fires | Loss         |
|------------|-----------------|--------------|
| 1913.....  | 3,127           | \$4,257,773  |
| 1914.....  | 2,974           | 3,411,224    |
| 1915.....  | 2,445           | 2,745,803    |
| 1916.....  | 3,305           | 4,050,743    |
| 1917.....  | 3,693           | 4,883,994    |
| Total..... | 15,544          | \$19,349,537 |

A very moderate allowance for fires which, through the neglect of local authorities are not reported to the State Fire Marshal runs the total safely over the twenty million mark.

### Home Building at Seattle.

IN a determined effort to meet in part at least the crying need for more homes in their city, a group of progressive citizens of Seattle, Wash., have formed the Seattle War Housing Corporation with a minimum capital of \$250,000. Houses will be built to sell, and the funds realized therefrom used to erect additional properties. The houses are all to be substantial in character, the backers of the project holding firmly to the belief that Seattle has a great future, and that its present industrial prosperity will not be checked with the termination of the war.



## ***War Department Has Standardized Its Contracts***

**T**HE War Department has completed a standardization of contract clauses which is to be used in all future Government purchases by the Department.

### **The Official Announcement**

The announcement of the change was made in the following official statement:

"Standardization of contract clauses which will be incorporated in all future contracts made by the various purchasing agencies of the War Department has been completed. The clauses are designed principally to speed up production, to guard against fraud, to protect the interests of labor and to guard and assure the interests of the Government and the contractors and thereby prevent legal complications.

### **Work of Special Committee**

"The work of preparing the clauses has occupied the attention of a special Committee of the General Staff for months. During this time all the various forms of contracts which have been used by the Government as well as dozens of others used between private individuals were examined in order that the best possible means of protection could be incorporated in the new clauses. Owing to the possibility of conditions arising which heretofore have never been a factor between contracting parties, it was necessary to prepare special clauses for such eventualities.

"With the idea of speeding up the settlement of disputes arising between the Government and the contractor regarding the adjustment of claims which might delay production during the settlement and further to make unnecessary the filing of lawsuits in the Court of Claims, a clause provides the means for the immediate adjustment of all such differences.

### **Adjustment of Disputes**

"In the event of the arising of any claims, doubts, or disputes as to the performance or non-performance of the contract which cannot be settled by mutual agreement, the question is placed before the Secretary of War or his duly authorized representative or representatives for adjustment. In the event that the matter is placed before a Board, a majority decision of the latter shall be final, but permission to appeal directly to the Secretary of War within a limited time is allowed.

### **Right to Terminate Contracts**

"The Government retains the right to terminate any contract in the public interest. If the Government finds that the need for any contracted supplies no longer exists, it can terminate the contract within a specified time. Definite provision is made for the

payment of existing stocks and raw materials on hand for the completion of the contract, and provision is made for the adjustment of all obligations assumed by the contractor for fulfilling this agreement. Arrangements are also made for the disposal of special facilities provided for the execution of the contract.

"Three clauses are devoted to labor. One provides that in the cases specified by law the wages of laborers, operatives, and mechanics doing any part of the work contemplated by the contract, in the employ of the contractor, shall be computed upon a basic day rate of eight hours' work with overtime rates to be paid for at not less than time and one-half time for all time in excess of eight hours.

### **Settlement in Labor Troubles**

"In the event that labor disputes should arise directly affecting the performance of the contract or delaying its execution, the contractor may appeal to the Secretary of War for adjustment of the difficulty. The contractor is obligated to comply with such adjustment as may be made by the Secretary. If such a settlement involves an increase of wages, thereby placing a burden on the contractor, he will be compensated for the extra outlay. Likewise in the event of a reduction of labor cost, the amount involved will be deducted from the cost in favor of the Government.

"Contractors are obliged to comply with existing State laws, and are also obligated not to employ in War Department contracts any minor under the age of 14 years or permit any minor between the ages of 14 and 16 years to work more than eight hours in any one day, more than six days in any one week, or before 6 a. m. or after 7 p. m. The employment of convict labor is prohibited, except in the event of an Executive order, and then only under the terms of such an order.

"On cost-plus contracts provision is made for a rigid inspection of costs, and the Government retains at all times the right to make checks and audits on materials and prices, as well as setting up machinery of inspection to insure full value received. The accounting books of the contractor are always to be open to the Government's officers. The decision of the accounting officer in regard to proper costs shall prevail. The right to appeal directly to the Secretary of War is given to the contractor. The contractor must comply with the ruling that in all cost-plus contracts, proposed expenditures for labor and materials shall be approved in advance.

### **Fixed-Price Contracts**

"In this connection the War Department will follow

its policy that wherever possible fixed-price contracts shall be used, but where it is to the advantage of the Government to use a cost-plus contract, a cost-plus fixed compensation contract will be used. All such contracts are subject to review by the Superior Board of Contract Review of the General Staff. The covenant against contingent fees as prescribed by Executive direction will be incorporated in the new contracts. In this the contractor expressly warrants that he has not employed a third person to solicit or obtain the contract in his behalf and that he has paid no fee to secure it.

#### Protection of Plants

"Contractors are obliged to provide protection to their plants against espionage, fire, explosion, acts of

war, and acts of enemy aliens. The contractor shall, when required, report to the Government the citizenship, country of birth, or alien status of any or all of his employees. The Government retains the right to prevent the employment of suspected persons or to demand their discharge from the employment of the contractor.

"If at any time the Government is able to provide materials to the contractor, the latter is obliged to accept them, if he has not already made commitments, arrangements being made for satisfactory compensation.

"The various supply bureaus of the Army are now preparing to adopt the new contract form."

## *Industrial Housing In Canada*

THE Ontario Housing Company has made a good beginning by recommending standards for industrial houses, says "Industrial Canada." The report has not yet been considered by the Government, but the minimum standard must be one of the foundations of a sound housing policy. Each municipality should be free to choose its own designs, but these should be subject to the approval of the provincial authorities, in order that the official regulations may be imposed uniformly throughout Ontario. Houses conforming to the standards recommended by the Committee could be built for \$2,500 and upwards, according to the number of rooms. Ventilation, room-space, height of ceilings, stairways, cellars, plumbing, heating, lighting, fencing and all details of house planning are provided for, and the quality of materials for interiors and exteriors is plainly specified.

As to land requirements, it is suggested that in outside areas, in no case should the size of the lot be less than 1,600 square feet, though a much larger space is desirable. The standards recommended are only minimum, but if followed, they will insure comfortable and healthful living conditions. Jerry-building should be stopped at once.

Nothing is more lamentable than the manner in which some of the suburban districts of our cities are mutilated by the complete absence of planning rules of any kind. On some of our municipal borders in Toronto, the condition is already becoming intolerable, creating problems which must be faced in the coming years only by a large expenditure of money and effort. In this connection, the Government should have acted long ago.

The financial problem is another side of the question. Private capital is too intent on larger profits to concern itself with industrial housing for the work-

ers, except in rare instances. If municipal money is used, municipal tax payers must make up the difference between the return their money would bring in this undertaking and what other classes of investment would yield. Formidable difficulties undoubtedly present themselves, particularly in cities in which land speculation has erected a wall against the builder and the house-seeker. No solution will be adequate which ignores the need of exercising the taxing power to bring idle land into productive use.

#### Must Reduce Fire Risk in Buildings

REPRESENTATIVES of the New Jersey Department of Labor are closely inspecting the structural condition of buildings throughout the State, and especially in the larger cities with a view to reducing the fire hazard. Within the past month owners of a number of properties in Newark, have been given limited time within which to safeguard their plants with fire alarm systems and fire extinguishing devices. Should the order be ignored, the unsafe properties will be closed.

Newark has had a number of bad fires in certain of its manufactories recently, and the State authorities are determined that the menace to life offered by fire traps into which hundreds of workers are frequently crowded shall cease.

The crime of permitting structures of this character to exist as long as they have, is the result largely of inadequate inspection staffs, and the frequent clashing of State and municipal building regulations.

**Prepare Now For  
Post-War Building Activity**

## Economic Housing of Industrial Workers

By LOUIS SIMPSON in "Industrial Canada"

IN a previous article it has been shown that the rental that it is necessary to charge for a painted clap-boarded house, when costing, including land and improvements, \$2,000, was \$200 per year. It has also been noted that, so far as the industrial worker is concerned, it is necessary, when considering the question of rent, to ascertain whether the house is so constructed that it can be heated at a minimum of expense. It was shown that, with badly constructed houses, the extra cost of heating might amount to as much as \$50 per year.

With a badly constructed house costing \$2,000, the nominal rent would be \$200 per year, but the actual rent would be \$250 per year, or nearly \$5 per week, a rental that is manifestly too high.

The following calculations are instructive:—

Rental of house costing \$1,200, including land and improvements:—

|   |          |
|---|----------|
| Interest on \$1,200 at 6 per cent.....      | \$72.00  |
| Depreciation on \$1,000 at 2 per cent.....  | 20.00    |
| Empties on \$1,200 at 1 per cent.....       | 12.00    |
| Insurance on \$800 at 1/3 of 1 per cent.... | 2.66     |
| Taxes on \$1,200 at 1/2 of 1 per cent.....  | 6.00     |
| Repairs .....                               | 4.33     |
|   | <hr/>    |
|   | \$117.00 |

In this case the necessary rental would be slightly less than 10 per cent. of the capital cost. The Government of the Province of Ontario have offered to advance money for the construction of houses, to be occupied by the industrial classes, demanding interest thereupon only at the rate of 5 per cent. It does not appear that the offer has been appreciated as it should have been. The following calculation will explain the benefit that accrues.

Rental of house costing \$1,330, including land and improvements:—

|   |          |
|---|----------|
| Interest on \$1,330 at 5 per cent.....      | \$66.50  |
| Depreciation on \$1,130 at 2 per cent.....  | 22.60    |
| Empties on \$1,330 at 1 per cent.....       | 13.30    |
| Insurance on \$930 at 1/3 of 1 per cent.... | 3.10     |
| Taxes on \$1,330 at 1/2 of 1 per cent.....  | 6.65     |
| Repairs .....                               | 5.00     |
|   | <hr/>    |
|   | \$117.15 |

The difference in the rate of interest charged upon the capital outlay makes it possible to expend \$130 more upon the house and yet only charge the same rental, the rental being only 9 per cent. upon the cost of the house, land, etc.

After the question of finance, the cost of the land, with improvements, is next of importance.

What portion of the total sum available per house

has to be expended upon land and improvements—and here it should be stated that land should not be built upon unless these improvements are made.

No agricultural land (without buildings) that has no special or unusual value because of unusual fertility or because of the presence of fruit trees growing thereupon, is worth, in Canada, more than \$100 per acre for quantity. A farm of 100 acres, at \$100 per acre, totals \$10,000. To this must be added the value of farm house and buildings. These may be worth \$5,000 more, making the total \$15,000. To this total should be added 10 per cent. for forced sale, making a gross total of \$16,500 for the 100 acres. It is evident, therefore, that \$175 per acre would be a full price for such lands, etc.

An economical yet sanitary layout gives 128 houses to 10 acres. The cost, therefore, of the unimproved land, including all necessary road allowances, will be only \$14 per house or, including land surveyors' and legal expenses, less than \$20 per house.

The costs of improvements vary within wide limits, depending upon local conditions, upon the quality of the improvements undertaken, and upon how the improvements are made; but under average conditions, it should be possible to make these necessary improvements at the cost of \$200 per house, making a total, for land and improvements, of \$220 per house.

This low cost can only be secured by:—

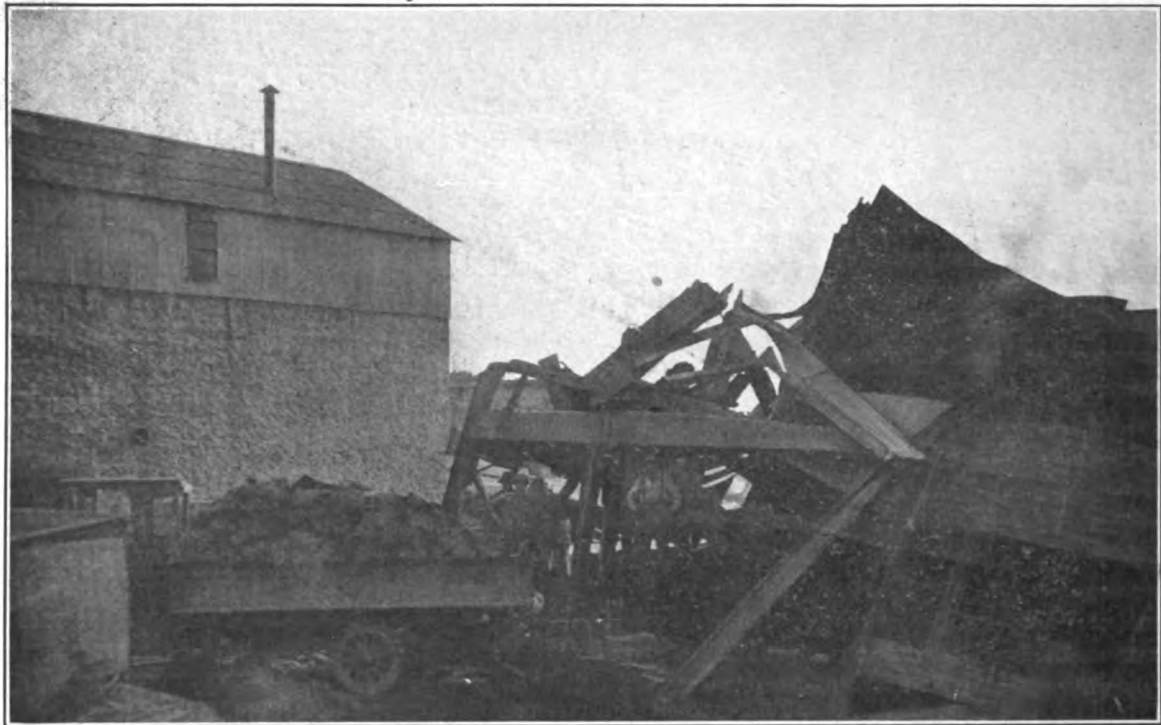
1. Purchasing the land in quantity, at a reasonable price. Making the improvements and constructing and renting the houses quickly. In fact, dealing in houses "wholesale" and not by "retail."

2. Making only such improvements as are necessary and which have been decided by some central authority as being the most economic. In fact, there is no money available for expenditure upon frills, and the sooner the town planning "milliners" appreciate this cold fact, the better it will be for everyone.

3. Building upon the improved land the maximum number of houses permissible under the improved sanitary conditions found necessary.

### Planning the Land

It still remains to be authoritatively determined what is the most economic method of planning land for the erection of houses to be occupied by the industrial classes in Canada. It is true that the Commission of Conservation has published some ideas or schemes of planning, but none are economical, whilst certain contain features that, under the conditions existing in Canada, make their adoption undesirable.



## Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs, the first cost is the only cost entailed.

### The Ideal Skylight

We have manufactured exclusively for us a Corrugated wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable fireproof skylight. Easily put into place and is much more economical than other types of skylights.

*A word from you will bring the whole story—prices, pictures and samples.*

**KEASBEY & MATTISON COMPANY**

DEPT. B-3,

AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding,  
85% Magnesia Pipe and Boiler Covering, and Asbestos Building Lumber



The Government of the Province of Ontario would be wise were they to offer a cash prize for the best economic layout for planning 10 or 20 acres of land, under conditions which should be first tabulated.

Great Britain and the United States are now realizing the economy of constructing standard ships; a like economy will result from the construction of standard houses.

The writer is strongly in favor of houses erected in rows or terraces. Not only is the cost of such houses less, but the cost of heating and the repairs are less.

Before economic construction can be assured, a number of problems will require to be solved, and it is suggested that the Government (Dominion or Provincial) take in hand these problems and arrange for their solution, at the hands of experts.

The following is a partial list of these problems:—

1. Should such houses be constructed with or without cellars.
2. The best system for constructing the outside walls, taking into consideration cost, durability, cost of repairs, fire resistance and heat losses.
3. The best system for constructing the inside walls (partition walls).
4. The best system for constructing the roofs.
5. The best system for constructing the ground floor.
6. The best system for constructing the bedroom floor.
7. Size and character of windows.
8. The necessity for some form of double glazing.
9. The necessity for some form of double outside doors.
10. Height of ground floor over street level.
11. Size and arrangement of kitchen.
12. Ventilation.
13. Sanitary conveniences and general sanitation.
14. Trimmings.
15. Minimum height of rooms.

A few dollars saved in each of the above-mentioned items come to a considerable total, and not only a few, but quite a few, dollars may be saved on some of them.

The essentials in such construction are: Elimination as far as may be practicable of risks from destruction by fire (internal and external); elimination of heat losses, reduction in repairs, whether the re-

It is to be regretted that the action of the Associated sults of legitimate causes or from improper usage. Fire Insurance Underwriters has, in the past in Canada, tended to prevent improvements in construction, which, whilst costing money, secured improved fire-resisting conditions. This is no work for the manufacturer, whose time is fully occupied in other directions, even if the underwriters were willing to meet

### Would Popularize Use of Common Brick

The fact that the common brick industry is to quite an extent a local business and many of its problems are of a local nature has ever been a drawback to thorough and effective organization of a national character for the improvement of commercial conditions in the trade. This, says "The Clay-Worker," we all know well enough, but what we need to realize right now is the call for universal co-operation to handle the broader problems of the industry of a national character, and to get the broader view of a national effort for more effective local co-operation.

From time to time there have been efforts of a national character to take up the commercial side of the brick business, and always good has resulted, and more might have resulted from a better support of such movements. Recently the Common Brick Manufacturers Association of America was organized by representative and enterprising brick manufacturers at Chicago and it is the desire here and now to make a plea to the trade far and near that it lend a hearty hand in support of this effort.

The lumber folks have just given us an example of how local business and effort can be profitably welded into a national federation, that is, the retail folks who do only local business. They have their state and regional organizations in which they take up their local problems. But they recognized that national problems come up now and then in addition to local matters, so they have formed a national organization. And it was through this federated effort that a committee of lumbermen going to Washington secured an immediate modification of the non-war building restriction order so as to allow the erection of new farm buildings not to exceed \$1,000 in cost without a permit.

That is a nice illustrative concrete example of how national organization can get results from national problems when fully supported by and representing the country at large. And there are not only problems of a nation-wide character coming up right along these days, but a properly supported central organization can be of much assistance and encouragement in local co-operation and the solving of local problems.

Let us get a full realization of all this into our minds and then get busy in hearty support of the latest organization effort in the interest of the great common brick industry.

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the requirements of those who have made the question of losses by fire a study.

The question of the economic housing of Canada's industrial workers can only be solved by the correct solution of all the problems involved, and the Government that secures for the public such solution will be entitled to the thanks of all Canada.

## *Exterior Stucco Finishes*

By GUY STUDY

**G**UY STUDY, a prominent St. Louis architect, prepared the following interesting article upon the desirability of stucco finishes for the house organ of the Sandusky Cement Company, from which publication we reproduce it:

"After considerable experimenting with different surfaces, some few years ago we hit upon a very simple treatment which was to give a wall surface long sought for. I have always maintained that the most satisfactory plaster house is one of sparkling white.

"The greater portion of the best plaster houses, in England and Ireland where the plaster house has been a great favorite for centuries, are pure white. In fact, the English white-wash their houses every few years, so that they are always brilliant spots shining out in contrast to the green foliage that surrounds them.

"In order to obtain a surface which would approximate that of the English houses and at the same time be permanent, white cement was decided upon for the finish coat, and it was the sand or other aggregate to be mixed with this white cement that required thought and experiment. After the results of our labors had amounted to nothing except the necessity of eliminating all the things that we had tried, we, by chance, ran across an old Irish plasterer who probably only by accident suggested the use of white marble dust. This was given a trial, and was found to be so highly successful that we never consider anything else. I refer of course to a plaster wall that is suitable for a country or semi-suburban residence, or where one wishes a less formal wall than that of a very large city house.

"White cement and sand were tried but the plasterers always objected to the sand as not having a 'tooth.' This marble dust should not be as fine as flour, but more like the average good sand. Limestone screenings were also tried, and as the small ends of the stones projected, the wall was covered with light and shadow instead of light and shade; besides the broken stones, even though very small, gave a surface that was entirely too rough. Small pebbles were given a trial, but as white pebbles were unobtainable in time the cement was washed off or worn away by the wind and rain and left a portion of the dark pebbles exposed, causing a marked difference in the color of the wall after a few years.

"Our method of applying the last coat, so as to obtain shade rather than shadow, is to mix the white cement and marble dust in a rather thin plaster and

throw it on with a wire brush or a paddle.' This last coat should be thin enough to run very slightly after it is applied to the wall. It can be put on any thickness (and in all cases so as to cover the under coat) but the consistency should be thin or wet enough to run down very slightly, not to exceed  $\frac{1}{2}$  inch, after it strikes the wall. It is this running that gives the slightly rounded surfaces, and gives a wall, that even on close observation, has the appearance of pebbles, and at a short distance off the texture is identical.

"A section of the wall about 20 ft. square should be covered at a time with the rough coat of Portland cement plaster applied under pressure, followed in about two hours or so with the finish coat, thrown on while the first coat is still green, thus uniting into a solid mass."

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### **Building Activity in Principal Cities**

Reports of the estimated cost of building work authorized in the month of August in first and second-class cities in New York State amounted to \$5,179,673. This is the smallest volume of building reported for any month since 1915 when these figures were first collected. In comparison with July there has been a decrease of 31% and in comparison with August 1917, the volume of building has declined 41%. Building costs as reported in August, 1917, 1916 and 1915, were, respectively, 9, 15 and 20 millions of dollars. The cities of Syracuse, Troy, Utica and Yonkers reported larger expenditures in August, 1918 than in August, 1917. The borough of Queens and the cities of Rochester, Syracuse, Troy and Yonkers filed plans showing a larger volume of building in August than in July. On page 5 is a table giving the estimated cost of work authorized and the percentage of change from July to August of this year and from August, 1917, to August, 1918.

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### **Sub-Committee on Structural Lime of A. S. T. M.**

A meeting of the sub-committee on Structural Lime of Committee C-7 on Lime of the American Society for Testing Materials, was held in Washington, Thursday, October 24. The entire committee was present and the meeting was in session until 11 P. M. Splendid progress was made in the subjects that are being developed by this sub-committee and at the next meeting of Committee C-7 in January, it will be in position to name many recommendations along the line of improving the lime industry in the construction field.

## Hollow Tile in Government House Building

By ALFRED T. MARKS, in "The Clay-Worker"

THE two great Government housing operations in Washington—the extensive groups of dormitories on Union Station plaza and those in Potomac Park—represent the greatest use of hollow tile ever attempted in a single enterprise in this country and probably in the world. The buildings are to be surfaced with pebble dash.

With the completion in December of the housing project on the area between the Capitol and the Station, commonly known as the Station Plaza, the United States Housing Corporation hopes not only to relieve in a measure the local demand for rooms but also to add buildings to the general scheme of city planning in Washington that will harmonize with other structures in the vicinity. This development is divided into two groups, the Station Plaza and the Capitol Plaza, each deriving its name from the direction it faces.

Two thousand persons will be housed in these two groups. All, of course, will be war workers—persons engaged in various departments of the government. The occupants of the two groups will be located generally in single rooms, and whether or not any of the space will be allotted to men has not been definitely decided. At the present time the demand for rooms for women workers is the greater. This and many similar questions will be answered when the dormitories are nearer completion. The answers will be largely governed by circumstances as they exist at the time of the opening of the dormitories.

At 23d and B streets, however, on the ground owned by the government and bounded on the south by D street, on the north by C street, the east by 21st street, and the west by 23d street, the United States Housing Corporation will have soon under way another development for the housing of 2,800 war workers. Fifteen hundred of these will be accommodated in single rooms and thirteen hundred in small apartments. This work has not been started yet, but will be soon in progress, with completion planned for the earliest date possible, consistent with good construction.

The buildings are of temporary construction. Simple colonial designs have been employed throughout. When the trees and shrubs are placed, lawns in, and the whole development has had time enough to assume in some degree an air of permanency, the district will give the impression of an American city during Crown colony days. This effect will be strengthened by cream tile facing and stucco exterior. Green blinds, white trim and black slate-colored roofs will add contrasting touches.

The designs were made by Waddy B. Wood, of Washington, D. C., in close co-operation with the United States Housing Corporation and the various experts called in by it. The buildings are the result of the best advice that could be offered for this type of construction, supplying this particular need and complying with requirements as to time and appropriation. Experts on hotels, schools, apartment house arrangements, women's welfare work, refrigeration, heating, electricity and sanitation and details including furniture and room decorations, have all been consulted as to these buildings; in fact, this is the policy of the Housing Corporation regarding any construction in hand.

In the Station and Capitol grounds, dormitory rooms will be uniformly 8 ft. 3 in. by 11 ft. 5 in., although a small proportion of double rooms will also be provided. Each room will contain one large window, a basin with hot and cold water, one electric light in the ceiling and a base plug for light or fan. The windows will have outside blinds with curtains and shades inside. Each room is to be provided with a large closet, two rugs, an iron bed, two chairs, a bureau and a writing table. Extra clothing may be placed in a utility box to be slid under the bed.

The dormitories will be three stories high and grouped into separate detached buildings, each consisting of two parallel wings. The first and second floor of each two-wing unit will be connected, this connection forming the curve of the letter "U," the parallel wings making the sides. The connection on the first floor, or the curve of the "U," is to be devoted to entrance, lobby and sitting rooms for occupants and guests. Above this is to be a second floor canvas-covered porch provided with porch furniture. The third floors of the two parallel wings will not be connected. In the basement below is to be storage rooms for trunks, servants' quarters, and a kitchenette and laundry for the women's group. Each hall cares for twenty-five persons, with a toilet, wash-room and shower and tub baths. Six buildings, as described above, are to be used each for a general group. Each group is arranged around a large dining room which will have ample kitchen capacity.

In the dining room and connected to it is the administration center which will contain a large porch and commodious lobby, with writing and sitting rooms and general office nearby.

Above the administration building in the women's group is to be the auditorium with a seating capacity

(Continued on page 91)

*A Department Devoted to the Use of*  
**AUTOMATIC SPRINKLERS**

IRA G. HOAGLAND, Secretary  
National Automatic Sprinkler Association

Edited

PAUL MASON, Special Representative

## ***Attitude of Waterworks Men Toward Automatic Sprinkler Service***

By CAPT. PAUL MASON, Fire Control Publicist, Cincinnati

ONE of the gratifying tendencies toward betterment of conditions favorable to fire control is the gradual growth of more friendly attitude toward automatic sprinklers on the part of representative waterworks men, among both municipally and privately owned plants. There are some marked exceptions, but the tendency, while not very clearly defined, is of great importance at this time, with the great increase of fire hazards and losses incident to war conditions and the general rise in prices which has affected sprinkler construction as well as all other factors in the economic situation. Under the circumstances, the elimination of anything in the way of restrictions that will tend to retard or prevent the installation of sprinklers is a marked encouragement of conservation of life and property from fire, at a time when this form of conservation is most urgently needed.

One of the most striking instances of this tendency, which is of relatively late development, was the elimination by the Richmond, (Va.) water department, last Fall, of the requirement for a detector meter on sprinkler service lines. The Richmond water department had been uncompromising for many years in its insistence that sprinkler services be metered, but Col. E. E. Davis, waterworks superintendent, after a careful study of the situation from all angles, decided that a bypass at the connection, with a small flow meter, would serve the purposes of the water department just as well, and abolished the requirement, thus saving to the purchasers of sprinkler equipment several hundred dollars on each installation.

### **Onerous Charges a Handicap**

Annual charges for sprinkler connections—generally known as the “ready-to-serve” charge—constitute another seriously deterrent influence on sprinkler installations, as the charges, as a rule, apart from all question as to the rightfulness of any charge, usually are high. To find a waterworks company reducing charges is therefore both gratifying and important.

Last winter the West Virginia Electric & Water Company, which serves Charleston with an excellent and copious water supply, reduced its domestic charges 25 per cent. The charge for a 4-inch sprinkler connection had been \$80 a year, up to 800 heads, and 10 cents a year for each additional head. After careful consideration of the fact that Charleston would be largely benefited by more sprinkler equipments, Superintendent W. C. Davisson decided to cut the annual rate to \$40 a year, raised the number of heads under this charge to 1,000, and fixed the cost of additional heads at five cents a year.

Later, Superintendent Davisson departed from his traditional policy of limiting the size of private fire service connections to four inches, and in the case of a building of large area and hazardous construction, granted a six-inch connection. This also is a very important concession, as it will tend to safeguard one of the most hazardous blocks in the business section of the city.

Richmond (Ind.), after a long controversy between the Water company and the Commercial Club, also is to be benefited by lower rates for private fire connections, a schedule of charges having been agreed on that is just about half what the company was charging, although not as low as the owners of sprinklered plants desired. It is, however, a decided step in the right direction, and will have an important bearing on fire control conditions in that thriving city.

These are indications that the leaven of compromise and concession is working, and that fewer restrictions on sprinklers—life and property savers and first-aid auxiliaries to fire departments—are to be imposed and enforced.

### **Dayton Takes Step Backward**

The Dayton (O.) Water Department, however, has moved in the other direction, as it recently imposed a charge for sprinkler service connections. The head of the water department seems to think that there is no ground for criticism of the action, in view



of an alternative clause in the rules providing that the charge shall be waived where (and when) the owner meters his sprinkler connection at his own expense. As the meter required is both costly and expensive to install, the interest on the investment would amount to a larger sum than would be necessary to pay for inspections of service connection at frequent intervals during the year; so there is no financial gain from that source.

Moreover, a meter on a sprinkler feed main is an obstruction to service, and therefore is an abomination not to be countenanced by those looking for adequate fire control, as nearly perfect as it is humanly possible to make it. In that respect—that is, in its effect on automatic sprinkler efficiency—the alternative, if accepted, results in an absolute loss, even though it may not be definitely ascertainable.

#### Of Vital Interest Now

These questions—charges for service, meters on service lines—and the kindred limitation of size of connections, are of vital interest at this time, when builders and owners of plants are being compelled by the Federal government, in many instances, to sprinkle their establishments for protection of the war work in which they are engaged. When such an order is issued by the War Industries Board, the question cost is not allowed to enter into the problem. The work simply must be done, regardless of expense.

It would seem timely, therefore, for the manufacturers of the country to direct the attention of the War Industries Board to the burdens imposed by these restrictions on automatic sprinklers, and ask for Federal intervention, to the end that installations be made with no expense attached not strictly essential to construction and installation of the equipment; and further, that when installation is complete and equipment in service, there shall be no obstruction to water supply by meters on connections and no lack of adequate water supplies by limitation of service pipe sizes.

(Continued from page 89)

of approximately 500. It will be equipped with a stage adaptable for theatrical entertainments, lectures or moving picture shows. Dressing rooms will be accessible to the stage. The floor will not be tilted as in a theatre but will be flat so that the hall can be used for community dances and social functions.

In the 23d and B streets group the arrangements for women are similar to the above. There will be space for 1,500 persons in single rooms with dining rooms and administration offices. Around this group

and cut off from it are to be the apartment buildings. Each of the buildings is to be three stories high and will contain four apartments on each floor. This will make separate units of twelve apartments each.

The apartments will be standard in size, containing a living room, two double bed rooms, kitchenette and a bath room which will be equipped with shower and usual appliances. The kitchen, in addition to the usual equipment, will contain an ice box, chest of drawers, and an electric range. Space in the basement will be used for maids' quarters, janitors, public laundry and storage. Steam heat will be used throughout the three groups. Each of the groups is to be provided with an infirmary in a separate building, which will contain wards, single rooms, diet kitchen, office, examination room, sterilizer, and porches. These will be under the direction of a competent trained nurse and supervised by visiting physicians of the city. These infirmaries will be capable of caring for twenty patients.

#### A Standard Equipped Risk

**A**N inspector made the remark recently that there was no such thing in existence as a standard equipped sprinklered risk or a standard electric lighting and power system. This same inspector went further and said that it was impossible to define a standard sprinkler risk or a standard electric equipment. Other inspectors, says "Fire Protection" agreed with the first statement but did not agree with the second.

Briefly, it may be said that a sprinkler system or an electric light and power system is standard if it complies with all the rules and regulations specified by the National Board of Fire Underwriters for such equipment. The only time that standards are complied with in every detail might be for 24 or 48 hours after the contractor had finished the job. Then what happens? Somebody in the building or power plant wants another light at a certain point and without regard to the number of lights permitted by the standard rules for the particular circuit to which it is to be attached, he proceeds to get some lamp cord and attaches the light. The sprinkler system may have been installed but a few weeks when the building occupant starts to build a partition here or extend somewhat the factory space there. A plumber is called in to adjust the sprinkler system. He may completely disarrange the spacing of the heads or he may add additional heads on pipes that were already loaded to capacity.

There can be little question that "standard equipped risk" has been greatly overworked and used to cover a great variety of near perfection patterns.

# JOHNS-MANVILLE Mastic Flooring

## —for the overworked floor in the wartime plant

Under conditions where hard usage and accidents make occasional repairs necessary — Johns-Manville Mastic Flooring offers another advantage and again proves its superiority.

Mastic Flooring is easily repaired. Just cut out the worn or damaged section. Reheat this same material with a small amount of flux which we furnish, then relay. The new spot — floated and rubbed down to the proper level — is immediately one piece with, and has all the characteristic qualities of the surrounding floor.

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**WEATHER:**

Always warm in winter and cool in summer if you are in a firesafe home, office or factory building.

# The Fireproofing News

CONTAINING DETAILED DESCRIPTIONS OF NEW DEVICES AND APPLICATIONS OF MATERIALS WHICH ARE OF REAL VALUE IN FIRESAFE BUILDING; ALSO NOTES ON THE LATEST BOOKLETS, CATALOGS AND OTHER FIRESAFE LITERATURE, WITH OTHER ITEMS OF INTEREST TO THE FIREPROOFING FRATERNITY

LATEST  
EDITION

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New York City, N. Y., October, 1918

Priceless

## Uses for Which Sheet Metal May Be Obtained

During the past few days a circular letter has been mailed by the Metal Club of Philadelphia to the customers of its members with information regarding sheet metals during the war and giving explicit information on the civilian needs for which supplies may be obtained. The letter follows:

The Government having requisitioned the output of the iron and steel mills for war use, our customers are asking whether they will be able to get sheet metals in future, and how.

To this we answer, under certain conditions YES in a limited way.

The question first to be determined by you is that asked by the War Industries Board. To what extent, if at all, will the use of this material contribute directly or indirectly towards winning the war and, if at all, how urgent is the need?

In the distribution of the iron and steel supplies the actual needs of the Government for the full prosecution of the war are first to be taken care of, but all essential industries and occupations are to be provided with material as far as possible.

To show your intention to co-operate in this matter and distribute your goods and labor solely for such essential needs as may be defined by the War Industries Board, it will be necessary to sign a pledge card. One card with every house from whom you buy. This will establish the fact and enable you to secure proper treatment.

We, as distributors, use these pledges, supported by similar pledges filed by us with the Director of Steel Supply as authority for getting our material from the mills. Shipments are very uncertain and irregular, as the direct war requirements must at all times have first consideration.

New work, unless for war essentials, is to be discontinued during the period of the war. Many new buildings are still to be erected for war needs. As it is less difficult to obtain material for direct war uses, and as our Government is urgently in need of the assistance of reliable sheet metal contractors, we would urge our customers to make every possible effort to procure this class of work.

The actual civilian population needs are also to be looked after. The Priorities Division of the War Industries Board has made specific provision for the supply of steel products.

(a) For the maintenance of existing

equipment for the supply of heat, light, power, and sanitation.

(b) For the necessary supplies and essential repairs (not extensions or replacements) to existing buildings and manufacturing plants.

Stoves and furnaces, cooking outfits, etc., must be put in proper shape for use, leaky roofs and spouts repaired that property may be kept in a livable state with a minimum use of labor and material.

When you find out your requirements, send the order to the house from whom you buy with a definite statement as to the use of same. They will advise you if it comes under the essential class. If unable to determine this fact, a definite ruling from the board at Washington will be secured.

According to the very best calculations all steel products are, and will continue to be, exceedingly scarce, and must be used in such manner as will insure every pound being applied only to essential uses.

## Poor Flue Construction in the South

In many parts of the South, even in substantial city dwellings, the only means of warming the room in winter is through open fire places, with possibly the use of sheet-iron stoves in some sections. Both of these methods abound with innumerable fire dangers, some in common and some that are peculiar to the particular heating arrangement in use.

A fertile source of fire is found in the brick or stone flues, which are usually set with ordinary mortar and liable to show various openings between the base and the coping which form excellent avenues for live sparks to gain access to woodwork in walls or attics. Eternal vigilance is the only price of safety and local agents can render good service by securing the frequent publication in their local papers of something similar to the following from the Raleigh, N. C., "News and Observer":

It is a constantly reiterated warning, but at this season of the year it is wise to look over the chimneys before starting the fires night

and morning for the first time. Throughout the summer the mortar has a tendency to fall out a little, leaving cracks that get bigger from year to year, and through those cracks fire sometimes creeps when the lightwood knots are piled on the fire. Or soot lodges in the cracks, and soot has a fashion occasionally of catching fire and whipping out the chimney. Then it is equally liable to whip out through a handy crack.

It only takes a little time to look over the chimneys and to look over every pipe connection, and every contact where the pipe or the chimney comes near any wood in the building. Between the wooden beams and the brick a crack may be open that will invite danger. Now when many of the men are away from home is not a good time for a building to catch fire, if ever any time is. For that reason more than ordinary precautions should be observed.

It is also wise to avoid filling the fireplace with too much inflammable stuff, for shingle roofs are dry in the fall, and big sparks falling on the upturned edges of dry shingles sometimes result in disaster.

So many ways invite loss by fire that ordinary prudence would suggest that the whole heating outfit should be gone over carefully, and no time is better than right away, today, as soon as you have read this caution. To move at this time is inconvenient. Help is scarce and high. To move in front of a fire is always expensive. Better keep to the old bush than hunt a new one under such conditions. It is only a little job to look over the premises. Get it done and off your mind, and when you are doing it do it thoroughly.

Are You Prepared for  
Post-War Building Operations!

## The Fireproofing News

Use this "One-Man"  
Building Material

IN the language of the contractor and architect Berger Metal Lumber is a "one man material." No derricks or other heavy equipment is necessary for handling or erecting.

This material can be erected with about the same number of men as is required for wood. But it is superior to wood in that it is fireproof, rodent-proof, moisture-proof, decay-proof; and every piece is factory-cut, ready to erect—no sawing or planing necessary—another labor saving feature.



**BERGER**  
*Metal Lumber*

See Sweets Index for further data  
Write for Bulletin L-19

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## Profit in Buying Bulk Cement

George W. Allen, an enterprising Staten Island building material dealer doing business at Grasmere, has hit upon a method of reducing the number of empty cement bags he has to handle, while at the same time earning a more satisfactory profit to himself on cement. Mr. Allen has a siding elevated slightly above his cement storage shed. His method is to buy cement in bulk, take empty bags into the car, have two men fill them and let them slide down the chute to a platform from which they are trucked into the storage room. Mr. Allen's storage room is high enough above the ground level for a wagon to drive nicely under the side door, where he uses a second chute in loading.

Mr. Allen had purchased three cars in bulk to date and figures that his profit runs \$20 a car better than when he bought cement in bags. He was asked if he could detect

any loss of cement in shipping and rebagging. "No," he replied, "every car so far has turned out well. In fact, there were a couple of bags over in one case. I regard this method of buying and handling cement as the most satisfactory except for one thing, and that is just now labor is very independent and we have trouble in getting men to bag the cement in the car."

Mr. Allen went on to say that he had tried the method of chuting the bulk cement direct into his storage warehouse but his buildings do not now make that arrangement advisable. He contemplates building a special cement storage directly under the tracks of the siding and with his cement bins directly under the car, he believes that the present difficulty he has with the labor question can be easily remedied. From such a bin it will also be easy to fill the bags that a customer might bring in himself.

The experience of Mr. Allen is one that will set many building material dealers to thinking. There is absolutely no reason why a great many of the present-day shipments in paper or cotton bags could not be taken in bulk to the advantage of both the manufacturer and retailer of Portland Cement.

A large precast concrete plant has been established at Morrisville, Pa., by the Pennsylvania Railway for manufacturing precast sections of roundhouses, telegraph poles, fence posts, etc. Seven and one-half per cent. hydrate will be used in the concrete mixture.

Now that the world is safe from devastation by the Huns, let us make it safe from the property destroying fire fiend.



## Concreting in Cold Weather

Contrary to the practice of former years concrete work is now extensively carried on during winter weather, and where intelligently directed the results are thoroughly satisfactory.

For the benefit of those planning concrete building during the present winter season we are reprinting from a late booklet issued by the Portland Cement Association some facts that should be kept constantly in mind by contractors.

Remember that during the first few days following the placing of concrete, alternate freezing and thawing at comparatively short intervals will damage it.

Remember that protecting the concrete against possibility of freezing is best, even though concrete which freezes before early hardening has been completed may not be permanently injured, if after thawing out it is not again exposed to freezing until hardened.

Remember that it is necessary to so mix, place and protect the concrete that early hardening will be complete before the work is exposed to freezing temperatures.

Remember that to do this:

(1) Sand and pebbles or broken stone used must be free from frost or lumps of frozen materials.

(2) If these materials contain frost or frozen lumps they must be thawed out before using.

(3) As cement forms but a relatively small bulk of the materials in any batch of concrete, it need not be heated.

(4) Mixing water should always be heated.

Remember that although adding common salt to mixing water will prevent freezing of fresh concrete until it has had time to harden, there is a limit to the quantity of salt which may be added if the final strength of the concrete is not to be affected. Salt simply lowers the freezing point of the mixing water; it does not supply what is most needed—heat and warmth. It delays, instead of hastens, the hardening of the concrete.

Remember that sand and pebbles or broken stone and mixing water must be heated so that the concrete when placed shall have a temperature of from 75 to 80 degrees.

Remember that some sands are injured by too much heat. The same applies to certain varieties of

pebbles and broken stone. A temperature not exceeding 150 degrees Fahrenheit will generally prove most satisfactory.

Remember to place concrete immediately after mixing so that none of the heat will be lost before placing in the forms.

Remember to warm metal forms and reinforcing before placing concrete. Be careful to remove ice and snow and frozen concrete remaining on the forms from preceding work. Forms can be warmed by turning a jet of steam against them or by wetting with hot water.

Remember that even though materials have been heated and the concrete placed immediately after mixing, it will lose much of its heat if not protected from low temperatures, at once.

Remember, therefore, to protect the concrete immediately after placing. Canvas covering, sheathing, housing-in the work, or hay or straw properly applied will furnish the required protection for different jobs. In addition to these means, small oil or coke-burning stoves or salamanders may be used in enclosed structures. Guard against dry heat.

Remember that temperatures which may not be low enough to freeze the concrete may, nevertheless, delay its hardening for a considerable time. Do not expect concrete placed when the temperature is low and remains low for some time afterward to be safe for use as soon as though placed during warmer weather.

Remember that if concreting is unavoidably delayed or interrupted the work should be covered until concreting is again begun.

Remember to cover and protect any section of the work as soon as completed. In severe cold weather, continue this protection for at least five days.

Remember that forms must not be removed from the concrete work too early. This applies to any concrete work, regardless of season, but is particularly important with work done during cold weather.

Remember that frozen concrete sometimes very closely resembles concrete that has thoroughly hardened. When frozen concrete is struck with a hammer it will often ring like properly hardened concrete. Before removing forms, examine the work carefully to see whether it has hardened or simply frozen. To determine this, remove

one board from some section of a form, pour hot water on the concrete or turn the flame of a plumber's blow torch or a jet of steam under pressure against the concrete. If the concrete is frozen, the heat will soften it by thawing the water contained in it.

Remember—Safety First.

Plaster specifications for two hundred and eighty houses at Bath, Maine, have been changed from gypsum to lime by the United States Industrial Housing Corporation.

Charles N. Rambo, a well-known fire prevention engineer is in charge of the insurance fire protection section of the Division of Finance and Purchases of the Railway Administration.

### Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912.

Of "Construction," published monthly, at New York, N. Y., for October 1, 1918. State of New York, County of New York, ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared G. A. Watson, who, having been duly sworn according to law, deposes and says that he is the Editor of the "Construction," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Construction Pub. Co., 95 William St., New York.  
Editor, G. A. Watson, 95 William St., New York.

Business Manager, G. A. Watson, 95 William St., New York.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

G. A. Watson, 95 William St., New York.  
L. C. Watson, Cranford, N. J.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.  
4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

G. A. WATSON, Editor.  
Sworn to and subscribed before me this 8th day of October, 1918.

HARRY H. CONWAY.  
(My commission expires March 30, 1919.)

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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

George A. Watson, Editor  
Bruce E. Loomis, Ins. Eng. Editor

Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

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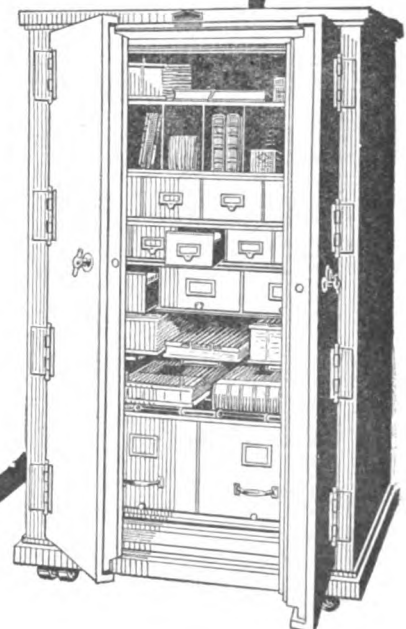
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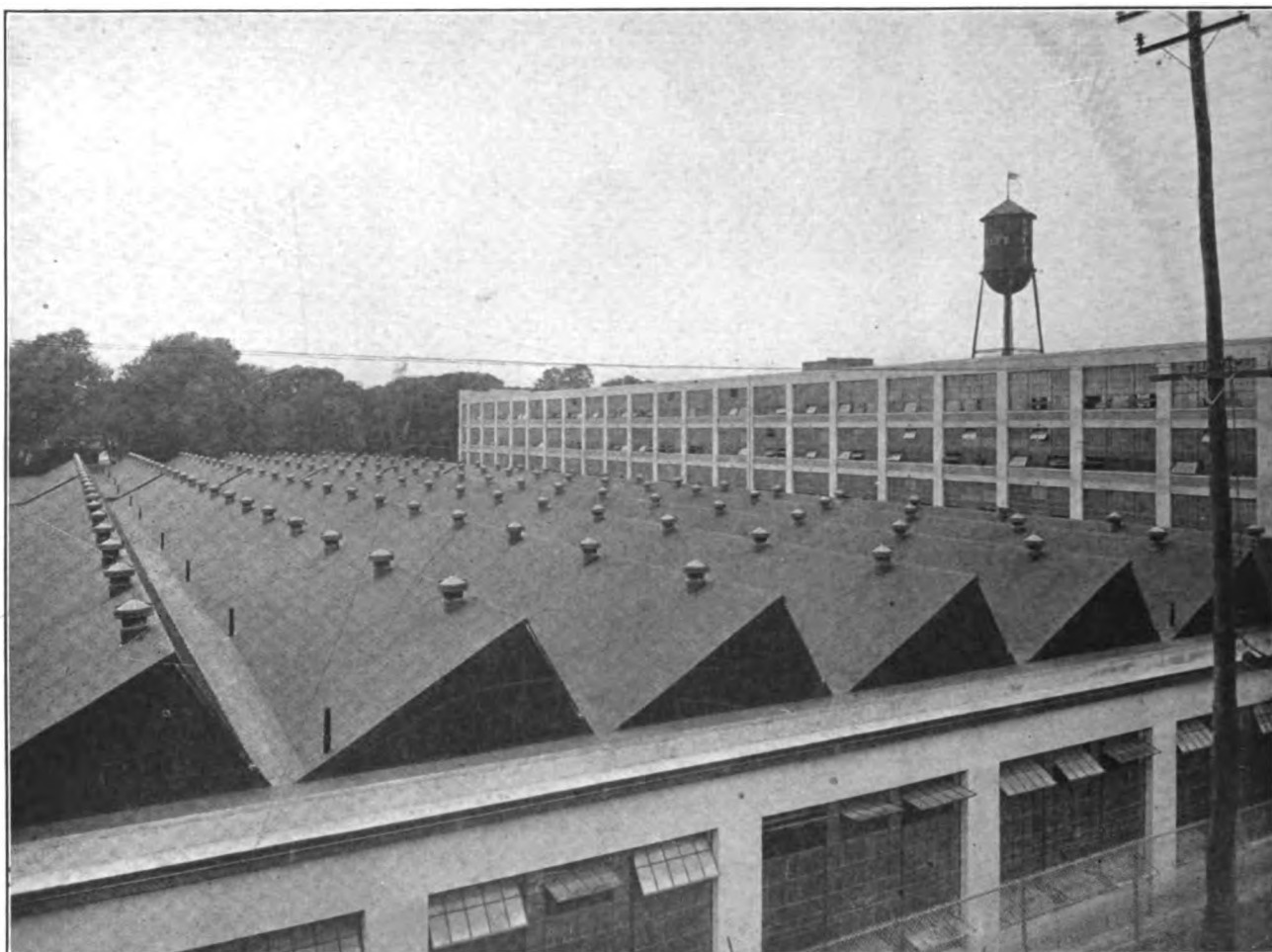
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

VOL. VII

NOVEMBER, 1918

No. 5

## Building Material Dealers Planning to Meet Post War Demands

OFFICIAL acts and intimations at Washington in the last few days make the assurance practically certain that the building industries of the country should be far advanced toward the new era awaiting them, by the first of the year, says the *Dow Service Daily Building Reports*.

Charles Piez, vice-president and general manager of the United States Shipping Board Emergency Fleet Corporation, has sent telegrams to many ship building plants throughout the country cancelling a number of contracts. Through the issuance of these orders it is expected large quantities of materials will be made subject to redistribution, thereby relieving the pressure on steel and other commodities entering into the construction of buildings as well as ships. Intimation has been made that following the conference of representatives of the Mayor's committee of New York and similar branches of the National Defense Society in other cities more latitude would be granted applicants desiring to proceed with construction.

In the meantime the building material situation here is being held in check by strong hands. The change in attitude of large distributors of vital commodities in big building construction with regard to acceptance of new business running into the summer and fall of 1919 for delivery; the sudden decision to take stock of the quantity of basic building materials in hand, and at the same time to ascertain the actual volume of construction that is likely to be classed as commercially essential, followed by intimations passed to well placed firms to "be covered" in certain lines; all support the general belief that long before the first of the year the building trades and industries would be well on the way toward preparing for important spring eventualities.

A survey of a list of architects' offices to ascertain the proportionate amount of work that awaits only

modification of the War Industry Board's restrictions shows that there is more than \$100,000,000 worth of building work ready to proceed. Among the real estate and building interests opinion is almost unanimous that building cannot go ahead with much speed before the actual ending of the war, but the nearer that comes the quicker will be the recovery.

Alfred E. Marling believes that high class apartments and tenements will have the first choice for consideration for building loans in certain sections only. There is not likely to be much building of private dwellings except, possibly, small buildings in outlying sections. Construction of lofts and factories is problematical. In the absence of accurate statistics as to demand and supply it is certain that building will be very active following an easing up of the money situation and cost of construction as labor becomes more plentiful.

## Building a Model Village

FOR the proper and permanent occupancy of its employees the Dominion Steel Products Company, of Brantford, Can., is erecting a number of industrial homes. The houses, which are in every sense substantial, have concrete foundations, and are of hollow tile covered with stucco. Individuality in design has been secured, and the general effect once the houses are completed is sure to be a pleasing one.

A description of the houses will be given in a subsequent issue of CONSTRUCTION.

While the plant of the Dominion Steel Products Company has been entirely engaged in war work for some time past, its operations will now be directed toward industrial pursuits.

## \$5,000 for Rebuilding

An appropriation of \$5,000,000 for rebuilding operations has been made by the Board of Foreign Missions of the Methodist Episcopal church. The board has mission stations and colleges in all parts of the world, a number of which were wholly destroyed during the war.

## *Prepare For New Business*

**A**LL restrictions upon building operations having been removed by the Federal Government, a period of unprecedented activity in commercial work may confidently be looked for in the near future, and architects, engineers and contractors as well as material manufacturers who have laid their plans to meet post-war conditions, should greatly profit during the new era.

Following the signing of the armistice the ban upon building activities was partly lifted, and this action was speedily followed by the removal of all prohibition, B. M. Baruch, of the War Industries Board, so authorizing on November 21st.

In explanation of his latest ruling, Mr. Baruch said in part:

"The action taken permits all building operations of whatever character, held up in the interest of the war program, to proceed. No further permits will be required from the War Industries Board or the state councils, through whom control over the situation in each state was maintained.

"Immediately following the signing of the armistice on November 11, the non-war construction section took steps to loosen the restraints on the industry, and in a formal order issued that day removed a great many of the barriers. Since then, and with a view to assisting the industry back to a complete peace basis as quickly as possible, a careful canvass has been made to determine whether the conditions obtaining in each state with respect to building materials, transportation, and the supply of fuel and labor would warrant a removal of the remaining restrictions. In this investigation the non-war construction section sought the views of the industry itself and of the state Councils of Defense. The replies received, coming from practically all the states, showed a unanimous opinion in favor of such action."

Municipalities will doubtless now arrange for the construction of school houses and public buildings of various kinds, imperatively needed, and the erection of which was only deferred because of the more pressing war requirements of the National Government. Municipal work will be closely followed by that called for by banks, trust companies and great industrial corporations, with whom the expense of building is of secondary concern to securing properties adapted to their various needs.

While a modest reduction in the cost of building material and labor may be looked for, this is not likely to be marked for a long time because of the large amount of reconstruction work to be done abroad,

and in which Americans will have a full share. Heavy costs will militate to a degree against extensive private building, and yet this is sure to be in considerable volume, the existing demand for office accommodation, mercantile properties and dwellings being insistent.

If the number of new buildings to be erected will be somewhat limited because of heavy costs, such curtailment will be more than counterbalanced through the alteration and repairing of old structures, work that can very profitably be done, and in the aggregate will reach large figures.

And it's a fair assumption that the buildings of the future will be far more largely of a fire safe character than those formerly erected, for if one lesson more than another has been driven home to the American people during the past three years, it has been that of conservation; of food, money and property values.

What is doubtless true of the character of new buildings holds good in the protection of established structures; for it is of little value to erect practically non-burnable structures if their contents are not to be safeguarded against the destructive blaze, hence the call will undoubtedly be for automatic sprinklers, fire doors and shutters, wired glass, fire alarms and other agencies that protect against fire.

Altogether the future is decidedly bright for interests concerned in seeing a type of structures erected and equipped in such manner as will make for a reduction in the shameful annual fire waste of the United States. Speed the day when it can truthfully be said that buildings in this country are erected to withstand fire, to the same or to a greater degree than are those of continental Europe.

### **Favors Concrete for School Building**

**N**EW YORK CITY has nearly ten millions of dollars available for the erection of additional public school buildings, which are sorely needed to accommodate the growing pupil enrolment. Mayor Hylan strongly favors the use of reinforced concrete, and is making every effort to secure the consent of the Government authorities to that end.

Through skillful designing the former spacious residence of William Waldorf Astor, on Fifth avenue, New York City, has been transformed into a high-class apartment building, containing non-housekeeping suites of from one to five rooms with a proportionate number of baths. The transformation affords a striking example of what may be done with property that has apparently outgrown its usefulness.

## *Replanning a City*

**R**OCKFORD, Ill., has been growing rapidly and substantially during the past few years, and its citizens have decided that the time has arrived when the structural development shall be along intelligently planned instead of haphazard lines.

A comprehensive plan of extension has been worked out by Myron Howard West, president of the American Park Builders, of Chicago, and the result is a most pleasing one, in which utility and beauty are blended.

The initial steps in the replanning of the city were taken in April 1915 by Adam Schwindt, at that time president of the Rockford Chamber of Commerce, who appointed a special committee of the citizens to investigate the feasibility of making over the city to more nearly meet the needs of the increasing population. This committee became the Rockford City Plan Commission; George D. Roper is its Chairman. Under Mr. Roper's inspiring leadership, the Commission devoted itself to its task with enthusiasm in spite of the anxieties incident to the great war and of many other public interests. After months of earnest study, the Commission called Mr. West in consultation. So impressed were all the members of the Commission with the comprehensive plan presented, that the executive committee was authorized to enter into contract with the American Park Builders for the services of Mr. West. The plan was submitted in its final form on February 28, 1918, and was unanimously adopted on March 2, 1918.

In drawing the plan, the growth for a half-century has been anticipated. Some of the features must therefore await that growth; many of them, however, may be realized without undue delay.

"We realize that this report is being submitted at a time when the thoughts and energy of the nation are centered on the great war and that there is, therefore, hesitancy in undertaking projects which may be deferred. In this connection, however, it is well to consider that the very foundations of city planning are conservation and efficiency. No more opportune time will ever exist to apply these to city building. While, therefore, we do not recommend that all the projects of this plan be undertaken at this time, we would urge upon you an immediate putting into effect of those suggestions having to do with control, especially in connection with the city's future growth, that the city may at once begin to save money and to insure itself against the duplication of past mistakes."

The object and scope of the plan include: a rearrangement of the streets; improving the steam railroad system, the system of interurban lines and the

system of local electric lines; the zoning of all buildings; a uniform distribution of the park units, having in mind the growth of the population, convenient sites for future schools and neighborhood centers, etc.; the arrangement of public building sites so that as new structures are needed they may be so placed and built as to form a dignified and beautiful group conveniently located and provided with attractive approaches and settings.

Among the other aspects of the subject dwelt upon in the report are that of grade-crossing elimination; the establishment of public comfort stations; tree planting and the ornamentation of streets; the establishment of a central warehouse district and freight terminal; and the improvement of the river front. The plan is rounded out by a scheme for the arrangement of the public buildings into a beautiful civic center.

The report is concluded with suggestions of ways in which the proposed plan may be put into execution.

### **Taking Care of Regular Patrons**

**W**ITH the return of peace, manufacturers of building materials and supplies, who for the past year or two have been devoting a considerable part of their energies to turning out war supplies, will be able to resume their customary lines, and serve their regular patrons. Many of the latter have been inclined to grumble on account of the poor service given them during war days, and have felt that the manufacture of war material was undertaken by a number of plant owners, not so much because of patriotic fervor as the chance for making added profit from the Government.

In the great majority of cases such a charge was wholly unjust and unworthy those suggesting it. Few manufacturers there are who would voluntarily care to divert their plants from the production of customary output to that of material wholly foreign to it, and if the supreme duty had not been the winning of the war, it is highly improbable that any considerable number would have undertaken Government work, however alluring the profit therein might have been.

To build up a line of customers in any line of effort requires time and effort, and no manufacturer will lightly do aught that will alienate his patrons. Because of that fact it will be appreciated that the majority manufacturers were reluctant to embark in Government work and only did so through a desire to help in securing a speedy and victorious peace for our country.

### Cost of Labor and Building Materials

IT is becoming more apparent daily in building material and construction markets that the building investor is seeking greater assurance of stability of price and basic cost of construction before releasing enterprises according to the *Dow Service Daily Building Reports*. In consequence of the general recognition of this tendency trade meetings are to be held in this city and many other parts of the country this week and next. The keynote of all will be how to insure price, stability and uniform construction costs. The Building Trades Employers Association of New York took steps last week to insure the stability of the labor situation. The board of governors adopted a resolution to the effect that all trade agreements expiring at the end of 1918 may be renewed for a time not exceeding one year, and that trade associations shall not agree to pay a wage in excess of that now being paid.

The window glass situation is typical of practically every other basic building commodity at present. Stocks were never so low. Jobbers' stocks are sufficient for any moderate demand, but since manufacturing interests had laid their plans for a very much restricted output during the season just starting it will be impossible for them to produce glass in the quantities that probably will be called for. Therefore the strain upon current jobbers' stocks is beginning to be felt. The present season was to have started on December 8, but because of the desire of manufacturers to conform to the wishes of the War Service Committee no repairs to plants had been made during the idle period, and with two years' depreciation it is impossible to throw in anything like plant capacity at present. Some will be able to start, but architects and contractors will not be able to figure on anything like adequate stocks until well into the close of the present season. There will be little or no glass at hand to replenish stocks until the middle of January. This also should affect prices, but the skilled artisans of the glass industries have had up for some time a wage increase proposition which probably will be partially granted.

In the common brick department there is a very definite effort being made upon the part of both manufacturer and distributor to keep the market from running away. In almost every department there are individual manufacturers of many building commodities who are finding it difficult to pass by the temptation to sell at a sacrifice to obtain ready funds, and there is also an inclination upon the part of some distributors to restrain the impulse to buy so as to crowd the market down as low as possible. There is in consequence a wide margin of prices quoted. As low as \$13.50 has been bid for "off load" brick,

and yet there are cases where the best grades are being held at \$15 a thousand. The cement interests are planning to enter upon an international market for the first time. The mills of the country have a capacity for barely normal domestic demand, but they are trying to offset this by rushing manufacture at full speed so as to have stock on hand when the export movement begins. Lumber is the only commodity that shows signs of price recessions, but that is only true of certain departments.

Building material manufacturers are told outright by architects and owners that the size of the peace time building movement is entirely within their hands. If they make the cost attractive owners will build.

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### Concrete Consistency Criterion

TESTS have demonstrated that there is such a thing as precisely the right amount of water to mix in a batch of concrete. More or less than this amount says the "Engineering News-Record" reduces compressive strength. On the actual job, however, such things as the method of placing or the size and congestion of the forms make it usually necessary to use a different proportion of water than that which will give the greatest strength in an isolated specimen of the same concrete under laboratory conditions. This variation from the optimum amount of water must be regulated by the skill and experience of the director of the concreting, so that in spite of the accepted necessity for a definite water content there is today more difficulty in determining the proper consistency of a concrete mix than there was in the old days when the amount of water used was a more or less negligible factor. What is lacking is some definite criterion of consistency which may be used as a measure of future strength. The need for this criterion is nowhere more clearly seen than in the manufacture of the numerous concrete barges and ships now under way. Ship concrete must be of the best. The thin walls must be of maximum density and strength. Both engineers and contractors in the various yards are as one in their efforts to produce the best possible material under the conditions, but in practically every yard during concreting there is a controversy, generally amicable—though sometimes toward the end of a thirty-six-hour continuous run somewhat acrid—between the engineer who is insisting on a mix of what he considers optimum dryness and the contractor who wishes to put in sufficient water to insure the easy flow of the concrete around the steel. So long as the measure of consistency is in the eye of the expert, just so long will there be this difficulty.



## ***Mighty Building Programme Awaits New York City***

**N**EW YORK builders are girding their loins like the gladiators of old in preparation for the great construction work ahead. The wonderful undertakings which give Solomon and his men a place in history as great builders cannot compare, all will agree, with the task ahead of the builders of this city. For well nigh a decade there has been comparatively little construction here, while on the other hand the city has steadily grown in wealth, business importance and as a residential community beyond the most liberal expectations. Since 1914, when much of the business of the entire world was transferred to New York, this one sided development has been intensified with the result that New York is greatly underbuilt. Survey made several weeks ago disclosed the fact that New York has about one-half as many homes, offices and factories as it should have that all needs may be satisfied.

Capital, labor and building material men are the masters of the situation. Like the starter at a race-course they hold the starting gun. When capital is made available for construction and labor wages are adjusted to peace time conditions and material men resume the fabrication of material, then the gun will be fired and construction and reconstruction of the city will be started with a rush.

Folks who will live through the next few years will witness a great transformation in the physical development of the city. Builders, and the most conservative of them, are agreed that never before in the history of building has there been a similar situation. Low sky lines will be lifted as high as the zoning law will permit; sections of the town skipped over in former developments will be invaded and built up; there will be heard in every corner of the parent borough the machine gun rattle of the riveter welding together the steel frames of business buildings, factories and apartment houses. In outer sections of the great metropolis the slower and more measured rap of the carpenter's hammer will echo through the streets, or across the lawns, or through the trees, because the building period ahead of us is not to be centred in Manhattan, Brooklyn or Queens but will be found in every section of the urban and suburban zone within forty miles of the City Hall.

It is remarkable, the feeling of optimism that permeates the building craft. Everywhere it is found in larger or lesser degrees. It is detected in the actions, talk and manners of the heads of the leading building concerns and even the boy who greets you at the information desk has imbibed some of the optimism which has spread through the concern since

the Germans accepted the armistice terms. Resumption of building is expected soon because builders will carry their enthusiasm into the inner offices of the comptrollers of life insurance companies and banks and to other financial agencies, and with such argument as the builders can present backed by such optimism as they display it will be hard for the moneyed interests to refuse support.

"We do not fear," one leading builder said, "that the lending institutions will not support us in this campaign, because they must realize as well as we do what are the needs of the city and what will be the consequences if nothing is done to relieve the shortage of homes and business premises now that the war is over and the country entering on a great era of peace. In the last week or two a development in the situation to which too much importance cannot be attached is the appearance of brokers with projects financed by property owners or others.

"It is many months since a builder has been offered a proposition where the financing had been arranged beforehand. It is a sign of the turn in the tide of disapproval of financing building projects. This seems to be the greatest of the deterrents in the path of builders at this time. They are resigned to the payment of higher prices for material and labor because this is an economic condition due to the war and one which will never be adjusted back to the pre-war basis. The resulting higher cost of construction is offset by the higher rentals which can be had if the wage scale is generally high.

"The labor problem, however, is not one that can be dismissed speedily, because builders have discovered that higher wages do not produce the same efficiency that lower wages brought before the war. Labor will have to be reorganized and it will take several months before it will be possible to harvest all the bricklayers and masons and carpenters and steel workers who left the building crafts to enter munition plants, shipyards or the army. Then casualties have depleted to some extent the ranks of the efficient ready to take up the big job ahead. These losses must be replaced by inefficient men who must be trained before they will have the quality or production value of their co-workers.

"Labor and money therefore will hold back the big building programme which has been mapped out for this city. Construction of small flats will be started next spring, but it will not be for several months later that the larger enterprises will be launched because it would be too late to start next spring the construction of large apartment buildings for the fall renting,

which is a factor in planning, despite the fact that builders and real estate men say that the out of season renting demand is sufficient to fill a good many of the largest apartment houses in town."

William H. Barnum, who with William Everdell, Jr., erected many large structures in this city in the last few years, notably the Guaranty Trust Annex on Liberty street, which is the last large office building to be erected in the downtown section; the Brooks Brothers Building, at Madison avenue and Forty-fourth street; the Longacre Building, at the northeast corner of Broadway and Forty-second street, said that at first thought, the present high cost of building would seem to argue against an early resumption of building activities. When we remember, however, that, for a considerable period prior to the war there was a large excess of space in New York City over requirements and that now requirements are considerably in advance of space, and when we remember further that New York City now occupies and will continue to occupy a position in the world's industrial life far more influential than during any portion of the period in which there was more than enough space for the city's requirements, it becomes obvious that we must revise our first impression.

#### **Finances Not Deterrent Factor**

"Nor can we expect a very early or radical decrease from the present cost of building," Mr. Barnum said. "I believe that the general economic situation will rapidly develop to a point where building in New York City will be resumed and continued for a considerable period on a large scale. In this connection we shall probably have to accustom ourselves to an increased rental schedule and also to a higher valuation on completed buildings.

"Some doubt exists as to whether the necessary financial assistance for building operations can be obtained. Personally I believe that the financial end will not be the deterrent factor. It is well recognized that building must be given the necessary assistance, although every one soundly interested in real estate in the city will proceed with caution and the hope that we will not again be placed in the position where space is a drug on the market."

Mr. Barnum thought that the resumption of building activities held in check during the war period would be one of the readiest methods of absorbing labor and material diverted to war work, and he is confident a disposition will be shown by all interested to proceed to this readjustment within a reasonable time.

J. E. R. Carpenter, whose entrance into the apartment construction field resulted in the erection of fine structures on Fifth and Park avenues, and David Tishman of Julius Tishman & Sons, whose opera-

tions include structures in the Park avenue district and through the West Side, agree that labor or material costs will not prevent building. They agree that financial support is what is wanted. Mr. Carpenter said further on the subject of labor that he expected that workingmen and skilled mechanics would demand high compensation for their labor for a long time, but that the builder would not object to this because the high wage scale is one of the conditions brought about through the war.

#### **Building Apartment Houses**

He said that the resumption of building would be introduced by the erection of five and six story apartment houses next spring and summer, to be followed next fall by the larger type house. The smaller house, he said, is in great demand and it is possible for builders to erect this class of building without much trouble or increased expense because steel and other materials whose prices have been greatly influenced by the war do not enter extensively into the construction of the smaller buildings. The small house can be ready for fall rental.

Many contracts for such houses, Mr. Carpenter said, would be given during the spring and summer period. Apartments of the finer class will be scarcer next fall than this season because the supply has not been increased while the demand has. There is room for more houses of the finer type, such as those in the Park avenue section, Mr. Carpenter feels certain, because in the case of his own house, he said, he could have rented every suite twice over so large was the demand for apartments renting for \$5,000 and more a year.

The uncertainty of money is the only factor in the situation which does not please him. Where the money is coming from to meet the demand for homes in this city is a question, he said. There is no doubt whatever but that the country has plenty of wealth because this is to be seen in the ability of people to pay the highest rentals.

Mr. Carpenter's views made clear the great importance attached to the attitude of the lending institutions in this reconstruction period. If they do not help the builders the builders will be unable to relieve the scarcity in the residential and business district, a relief which folks expected would come just as soon as the country had finished whipping the Kaiser and his armies. It is the hope of Mr. Carpenter that when the lending institutions start to promote operations they will consider the current conditions and lend accordingly. If they will not advance sufficiently to cover the increased cost of construction then real estate values will suffer because builders will have to save the difference in cost of construc-

tion in the purchase of the land. If this cannot be done then there will be very little building.

The days of the "shoestring" builder have passed and never will return because the interests which hold mortgages will not permit this type of builder to operate here, because the untrained builder cannot compete with the trained man, the result being that investment in the former's house is not as safe as in the latter's property.

The fact that society had accepted the so-called flat, Mr. Carpenter said, would bring the best minds in the architectural world into the field of apartment designing. The field has been enlarged and the opportunities for the high class architect never were greater than in the apartment field, because of the investment value of this type of house due to the high rentals paid for suites in them. Mr. Carpenter is optimistic over the future.

David Tishman is prepared to start building apartment houses just so soon as the moneyed interests of the city will support building. Of course he would not enter on projects which could not be completed, he said, in time for rental next fall. Timely construction is not as essential to the success of an operation as before the war, because apartments can be rented out of season as well as in season, but caution is a virtue. Mr. Tishman intimated, and builders will try to regulate operations so that they will be finished on time. "Labor costs or material prices will not hold us back when financing arrangements can be made," he said. He, too, is of the opinion that the lender should help the builder by making the loan sufficient to cover the increased cost of construction.

"The matter of financing may be cleared up sooner than is expected because in the last ten days many propositions have been brought to us where financial support is assured either by the seller of the property or other interests. It is a long time since we have been offered such proposals and we consider this an indication of the return of money to the market for structural promotions. There is bound to be a lot of construction," Mr. Tishman went on, "because there has been so little for the last few years. In my opinion there has never been a condition that could compare with the present one. Material costs will come down in due time, but they will never drop to the level of before the war. It is my belief that labor also will be cheaper, but it will not be as cheap as when it was employed to build up Park avenue and the West Side apartment house sections. But the increase in the cost of production will be worked off in the increase in rentals. Rentals paid should have the effect of influencing moneyed interests to build."

A great many more apartments will have to be erected before the supply will be sufficient to influence the lowering of rentals, Mr. Tishman said.

## **Remove Limitations on Building Material Production**

**B**Y authority of the War Industries Board "all limitations on the production of building materials, including brick, cement, lime, hollow tile and lumber," have been removed, and materials "so produced may be sold and delivered for use in connection with any building project, for which no permit or license is required, under revised priority circular No. 21, as further revised by the first section hereof, or to any project authorized by permits or licenses issuance in pursuance of said circular."

**T**HE Lime Association now boasts a membership of one hundred and fourteen, "and several additional companies have signified their intention of joining. This membership includes a large majority of the country's tonnage" and, according to General Manager Robert F. Hall, "makes possible, with the advice and help of the members, a campaign which will make the most of the opportunities presented by the problems of readjustment."

**I**T is understood that the War Department has a more extensive program for the construction of concrete craft than has the Shipping Board. The program of the former includes the building of barges, river steamers, water-carrying boats, mine-planters and ships.

## **Standard Sand for Plastering**

**N.** G. HOUGH, of the Lime Association, has been charged by Committee C-7 on Lime, of the American Society for Testing Materials, with recommending a standard sand for plastering purposes. Requests for five-pound samples of the material have been sent by Mr. Hough to dealers in New York, Philadelphia, Wilmington, Atlanta, Cleveland, Chicago, Indianapolis, Cincinnati, Toledo, Detroit, St. Louis and Kansas City.

## **Three Million Dollars for Schools at Pittsburgh**

**T**HE Board of Education of Pittsburgh, Pa., proposes the expenditure of \$3,000,000 for the erection of new schools in that city. The pupil enrollment is growing constantly, and additional structures are badly needed. All of the new buildings are to be of a substantial character, and will combine attractive appearance with utility and security.

BUILD SO THAT IT CANNOT BURN



# Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs, the first cost is the only cost entailed.

### The Ideal Skylight

We have manufactured exclusively for us a Corrugated wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable fireproof skylight. Easily put into place and is much more economical than other types of skylights.

*A word from you will bring the whole story—prices, pictures and samples.*

**KEASBEY & MATTISON COMPANY**

DEPT. B-3,

AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding,  
85% Magnesite Pipe and Boiler Covering, and Asbestos Building Lumber



## Forest Fires in Minnesota

**D**URING October severe forest fires swept over a section of Minnesota, the devastated area including 150 square miles of territory in Lake, St. Louis, Carlton, Itasca, Aitkin, Crown Wing, Beltrami and Koochiching counties, embracing wholly or in part the cities or towns of Duluth, Cloquet, Moose Lake, Kettle River, West Superior, Brewster, Brookston, Adolph, Proctor, Antonbba, Lawler and Bain.

The property loss is roughly placed at \$25,000,000 and the insurance loss at \$10,000,000.

Now that sufficient time has elapsed for a complete investigation of the disaster, the subjoined comment, prepared by C. Louis Weeks, insurance commissioner of Minnesota, will be of peculiar interest, and should prove very informing to all students in fire prevention.

### Not the Work of Hun Sympathizers

The newspapers as well as the insurance publications have already given detailed accounts of the devastation caused by the forest fires of last month, but as the first accounts were somewhat hysterical it is advisable that any misconception as to the start or nature of these fires be dispelled. We deplore frenzied statements at any time, but they are particularly reprehensible when sufficient time has elapsed in which to obtain a clear understanding of the facts involved. One article, which was issued about three weeks after the fire, said: "Fire insurance found its attention attracted away from the usual run of events this month, to a resumption on a gigantic scale of the activities of German destructionists—for Government authorities announce that the frightfully extensive forest and town fires in Minnesota, were traceable to Hun spy work. \*\*\* The toll taken in Minnesota by the Hun devils will certainly make fine reading for Bloody Bill."

The Insurance and Fire Marshal's Departments as well as the State Forester have made and are making investigations but up to the present time are convinced that the foregoing statement is not based on fact. So far as we have been able to discover, the fires were due to a combination of circumstances which do not occur frequently but which may reoccur. To say that any one condition or one cause was responsible for the catastrophe probably would be an exaggeration. We do know, however, that the extremely dry weather and the gale of wind were responsible for the spread of the fires and the start was due largely to our old friend Carelessness. Peat bog fires have been burning in Northern Minnesota all summer, although no particular apprehension was felt on

that account. These fires are smouldering fires in the peat or decaying vegetable matter in low spots which become dry through the lack of rain. This is a factor over which we have no control, but a contributing factor, which is almost, if not fully as important, is under the regulation of the public. We refer to the extensive drainage projects necessitated by the unregulated, scattered settlement of land and the resulting over-drainage of certain districts. These factors made the peat fires possible, but regardless of their cause, local authorities and individuals should have taken steps to control them. The application of water, except in huge quantities, is useless and the fire can be controlled only by trenching around it. This does not put it out but prevents its spread into the surrounding brush and timber.

Another contributing cause was the promiscuous burning of brush by settlers contrary to orders of the State Safety Commission. Locomotives and threshing rigs contributed their share of fires which smouldered and burned quietly until the development of the high wind.

### A Series of Fires

Contrary to the general impression, the destruction was not due to one immense fire which swept from Bemidji to Duluth, but to a number of fires, the largest of which traveled about twenty miles. According to the investigation of Mr. Cox, State Forester, groups of smouldering fires were fanned by the sixty-mile gale into running fires which united to form a solid front, which, in the case of the wildest fire, that which destroyed Moose Lake, had a front of approximately seven miles. To the south the Arthyde fire had a three-mile front and to the north the Corona fire had a four mile front. The Cloquet fire had about a six mile front and there were a number of other smaller fires which destroyed isolated settlements. On account of the high wind the fires burned in strips with constantly narrowing fronts leaving great patches of green timber between them. Once the fire had gained headway, it behaved like a cyclone of wind and did just as freakish things as would be done by wind. In some places it burned everything clean, leaving practically no ash while in others it left buildings intact while burning everything in their immediate vicinity. At Cloquet the fire swept over a wide territory like a blast from a furnace. As contrasted with this behavior its action in leaving a little dwelling in Moose Lake is most peculiar. Every building within 500 feet of this house was consumed, but even the paint on this dwelling was not damaged. Undoubtedly the composition roof minimized the spark hazard, but it

is evident that if the full force of the wind had carried the fire directly toward the house, nothing could have saved it.

#### **Freak Antics**

In one case the fire destroyed only the root cellar of a farm and left all other buildings intact, while burning the forest on all sides of the property. The most extreme example of the peculiar action of the fire is probably given in the destruction of Cobb School in Duluth. This was a modern building of reinforced concrete construction having tile partitions and an incombustible roof. The nearest and only exposure within 200 feet is a small 1½ story frame, shingle roof dwelling situated in the direction from which the fire came. The district is purely residential, being on the edge of the city and entirely free from congestion of any kind. In spite of the opinion of one prominent insurance journal to the contrary, we could see nothing in the nature of grass or brush exposure, which in our opinion could be classed even as a mild exposure, within several thousand feet, but in spite of this fact, the school building was completely gutted and the frame dwelling was undamaged. Hundreds of incidents might be cited, many tragic and a few humorous, in describing the unexpected behavior of this hurricane of fire but it has been our intention chiefly to show characteristic scenes of the destruction, as well as to dissipate the false impressions held by many people regarding the nature and extent of the fire. The destruction to life and property was appalling and it is to be hoped that means will be provided to guard against a repetition of such calamity. The appropriation of money for the payment of rangers should be complemented by a comprehensive system of distributing settlers over the district and the maintenance of a steady, forceful campaign of education leading to the elimination of carelessness and irresponsibility where fire is involved.

#### **Rebuilding Plan of French**

**I**T is understood that in the reconstruction of the destroyed areas of France, the external appearance of the former structures will be retained, while the interiors will be along thoroughly modern and sanitary lines.

During the entire progress of the war, French boards of appraisers carefully estimated the value of property destroyed by the Huns. To those desiring to rebuild, the Government will issue bonds up to 80 per cent. of former sound values. Ultimately Germany will have to foot the bill.

General offices of the Associated Metal Lath Manufacturers, have been removed from Cleveland, Ohio, to Washington, D. C.

#### **Determine Upon Price For Tin**

**G**EORGE ARMSBY, in charge of pig tin for the War Industries Board, is authority for the statement that the price governing tin allocated to this country, and to be distributed by the United States Steel Products Company, had been fixed.

Regarding the further report, that instructions had been issued to the United States Steel Products Company to make no more purchases of tin through the inter-allied executive, Mr. Armsby said that this was incorrect. He pointed out that the company merely acted as agent of the Government in receiving and distributing the tin allocated by the executive. In response to an inquiry as to whether additional allocations of tin for shipment to the United States would be made by the executive, Mr. Armsby explained that this question was now under negotiation by cable with London.

The understanding in the trade is that the price fixed will be on the basis of the cost of the tin to the United States Steel Products Company. This, it is believed, will mean a price of at least 73 or 74 cents, against the prevailing nominal quotations of 69 to 70½ cents, according to quality. Pending announcement of the fixed price, which is expected to furnish the trading basis for the market, business is virtually at a standstill, as has been the case, indeed, for some time past.

Criticism of the Government plan of control has been severe since its inauguration and, judging by comments, is by no means abating. Following are the views expressed by one prominent interest, typical of opinions advanced in other quarters:

#### **Not Viewed With Favor By Trade**

"The position created by Government control is very peculiar and unfortunate. Regulation was instituted largely for the protection of consumers and apparently on the assumption that there was a shortage of tin here. Arrangements were entered into with the Inter-Allied Tin Executive in London whereby under a system of allocation the United States was to be assured of an adequate supply of tin at reasonable prices. The United States Steel Products Company was appointed as agent of the Government to import and distribute at cost the tin thus allocated.

"Here we have a radical departure from the usual procedure. The price was not to be determined by the position of the market at the time of the sale, but rather on the basis of the cost of the tin at market of origin plus transportation costs, etc. If there was a real shortage of tin, this would naturally be an advantage to the consumer and approval of many of the users has apparently been obtained to the scheme."

## Sale of Stone in the United States Last Year

**T**HE total value of stone sold in the United States in 1917 was \$82,215,671, an increase of 4 per cent. over the value of that sold in 1916. This increase followed an increase of 6 per cent. in 1916 and a decrease of 4 per cent. in 1915. The quantity of stone sold in 1917 was approximately 82,800,000 short tons, a decrease of about 9 per cent. from that sold in 1916.

The increase in value in 1917 was due entirely to the greater value of limestone sold, as the total value of all other varieties of stone sold was less, the decrease ranging from 1 to 11 per cent. An increase of 12 per cent. in the value of limestone was due to a large increase in the output of stone quarried for use as furnace flux from 23,623,508 long tons, valued at \$13,946,882, in 1916, to 25,574,146 long tons, valued at \$18,679,213, in 1917. The production of limestone sold to industrial works, such as paper mills, sugar factories, glass works and alkali works, also showed an increase in both quantity and value. The output of limestone for agricultural use, however, decreased 3 per cent. in quantity, although it increased 22 per cent. in value.

Of all the stone sold monumental stone increased in value of output and paving stone remained about the same and an increase in the value of sandstone offset decreases in the values of the other varieties. Building stone, curbing, flagging, riprap and crushed stone decreased in both quantity and value.

The value of monumental stone in 1917 (\$8,102,493) increased 10 per cent. over the value in 1916 (\$7,372,620). This is the largest value ever reported, but is due to the increase of 38 cents in the average price per cubic foot, as the quantity decreased 10 per cent.—from 4,552,039 cubic feet in 1916 to 4,058,626 cubic feet in 1917. In 1917, 83 per cent. of the quantity and 70 per cent. of the value was for granite, the remainder being for marble.

Continued depression in the building industry in 1917, which affected the better grade of building stone of all kinds, caused a decrease of over 17 per cent. in value and of 30 per cent. in quantity. The output for 1917 was 17,263,893 cubic feet, valued at \$12,102,914, and that for 1916 was 24,754,747 cubic feet, valued at \$14,677,808. The value of paving blocks sold in 1917 was \$2,732,444, practically the same as in 1916. This sum represented an output of 48,907,677 blocks having an average value per 1,000 blocks of \$55.87.

Though figures showing the exact quantity produced in 1916 are not available, a close estimate, based on an exact knowledge of 87 per cent. of the output, showed an output of 55,061,840 blocks, a decrease of 11 per cent. The value of both curbing and flag-

ging decreased 13 per cent. in 1917, that of stone for riprap decreased 31 per cent. and that of stone for rubble increased nearly 5 per cent. The figures representing sales of stone of these classes are as follows: Curbing, 3,698,275 lineal feet, valued at \$1,402,980; flagging, 3,027,115 square feet, valued at \$356,327; riprap, 2,682,939 short tons, valued at \$2,208,373; rubble, 915,646 short tons, valued at \$864,321. Crushed stone amounting to 40,285,377 short tons, valued at \$29,065,509, was produced in 1917, a decrease of 7,790,204 tons (16 per cent.) in quantity and \$397,043 (1.3 per cent.) in value. The average value was 72 cents per ton in 1917, an increase of 11 cents.

Pennsylvania, Ohio, Vermont, New York and Indiana were the ranking States in value of stone produced in 1917 as in 1916.

## General Contractors Form Organization

**R**EALIZING the manifold advantages that would accrue through co-ordination of effort, many of the foremost contractors of the country a short time ago effected an organization called the Associated General Contractors of America, officers being chosen as follows: President, D. A. Garber, New York; first vice-president, W. A. Rogers, Chicago; second vice-president, T. T. Flagler, Atlanta; third vice-president, John W. Cowper, Buffalo; treasurer, C. F. Mullen, Cleveland. A secretary will be named later by the executive committee. Qualifications for membership in the organization provide:

"Sec. 1. Only general contractors, either individuals, firms or corporations, who have been engaged for at least two years in general contracting prior to applying for membership in this association, or who have established a reputation for skill, honesty and responsibility, shall be eligible for membership. They must also undertake work in its entirety, partly at least with their own constructing forces.

"Sec. 2. Members of the association must be associated organizations of general contractors, individuals, firms or corporations engaged in general contracting. Only such members of associated organizations as fulfill the above requirements shall have voting representation in this association."

Annual membership dues will be \$100 for each individual, firm or corporation.

**MASONRY CONSTRUCTION  
INSURES PERMANENCY**

# Barrett Specification Roofs

## These Buildings all have Roofs that can be forgotten for 20 Years!

The owners of thousands of buildings scattered all over the United States (a few of which are illustrated herewith), have received from us a Surety Bond which guarantees their roofs *against leaks, wear and maintenance cost for 20 years.*

Of course, Barrett Specification Roofs do not need this guaranty to make them wear and last. We issue this Surety Bond Guaranty merely as means of impressing upon you our confidence in Barrett Specification Roofs. The guaranty is your assurance that you have on your building a roof that will give you complete, unqualified satisfaction for 20 years at least, and probably much longer.

All you need to do to have such a roof is to incorporate in your building specification this sentence: "The roof shall be laid according to The Barrett Specification dated May 1, 1916, and the contractors shall obtain for us the Barrett 20-Year Guaranty Bond."

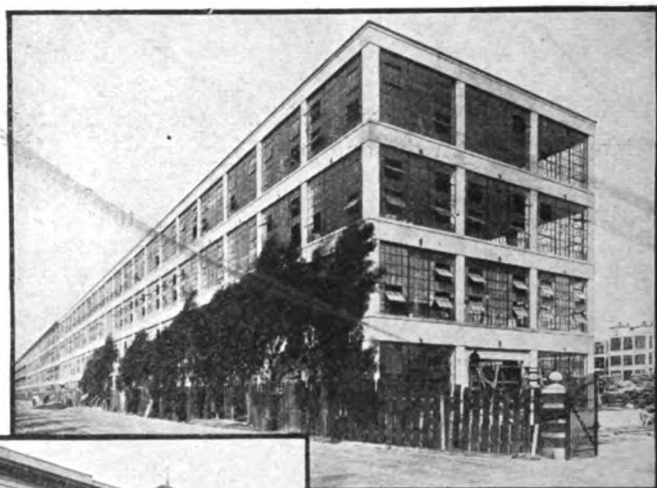
There is no charge for this Bond. It is obtainable on any roof of fifty squares or larger in the U.S. or Canada in towns of 25,000 or more, and in smaller places where our inspection service is available. Barrett Specification Roofs cost less per year of service than any other kind; they take the base rate of fire insurance; in fact, any way you look at it, a Barrett Specification Roof is the best roofing made for permanent buildings.

A copy of The Barrett 20-Year Specification, with roofing diagrams, sent free on request.

The **Barrett** Company

New York Chicago Philadelphia Boston  
St. Louis Cleveland Cincinnati Pitts-  
burgh New Orleans Detroit Birmingham  
Kansas City Minneapolis Nashville  
Salt Lake City Seattle Peoria Atlanta Duluth  
Milwaukee Bangor Washington Johnstown  
Lebanon Youngstown Toledo Columbus Richmond  
Latrobe Bethlehem Elizabeth Buffalo Baltimore

THE BARRETT COMPANY, Limited: Montreal  
Toronto Winnipeg Vancouver St. John, N. B.  
Halifax, N. S. Sydney, N. S.



ABOVE: Pierce Arrow Motor Car Co., Buffalo, N. Y. Gen. Con.: Aberthaw Construction Co., Boston, Mass. Roofers: Jameson Roofing Co., Buffalo, N. Y.



AT LEFT: Building at St. Mary's of the Woods College, Ind. Arch'ts.: D.A. Bohlen & Son. Gen. Cont's: The Bedford Stone & Construction Co. Roofers: Terre Haute Roofing Co., Terre Haute, Ind.

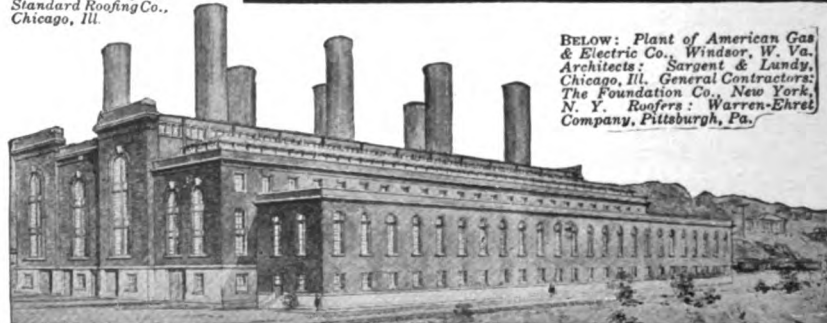


ABOVE: Lamar Street School, San Antonio, Texas. Arch'ts.: Adams & Adams, San Antonio, Texas. Gen. Cont's.: Wright & Sanders, San Antonio, Texas. Roofers: Turner Roofing & Supply Co., San Antonio, Texas.

AT RIGHT: Commonwealth Edison Sub-Station, Chicago, Ill. Arch'ts.: Van Holst & Fyfe, Chicago, Ill. Gen. Cont's.: McCarty Bros., Chicago, Ill. Roofers: Standard Roofing Co., Chicago, Ill.



BELOW: Plant of American Gas & Electric Co., Windsor, W. Va. Architects: Sargent & Lundy, Chicago, Ill. General Contractors: The Foundation Co., New York, N. Y. Roofers: Warren-Ehret Company, Pittsburgh, Pa.





## *Perfects New Flashing For Slate Roofs*

OF interest to all concerned in slate roofing is the new device for flashing carefully worked out by James H. Munro, of the Inlaid Slate Company of Pen Argyl, Pa., and now manufactured by that corporation. The conditions that brought forth the invention and a brief description of its composition are thus set forth by the "Daily Free Press," of Easton:

Slate operators, especially those whose product is chiefly roofing slate, are elated over the acceptance by the U. S. Bureau of Standards of the device designed by James H. Munro, of Pen Argyl, to replace metal flashings which have heretofore been used in the "valleys" of slate roofs.

The problem of obtaining metal for flashings has long been a cause for worry among government officials in charge of the housing projects. They recognized the importance of using slate for the hundreds of permanent structures which are being built under their direction and some weeks ago, when the scarcity of metal became acute, an appeal was made to slate manufacturers to get together and endeavor to find a substitute that would be in keeping with the wearing qualities of the slate roof. Accordingly, Arch M. Jones, who is representing the Pennsylvania Slate Manufacturers' Association in Washington, and who is in close touch with government officials, came to the Slate Belt and explained that unless a substitute was found promptly, specifications calling for thousands of squares of slate would be changed to some other roofing material.

This would mean a cessation of the government contracts, upon which the quarry operators are dependent until industrial and domestic building is resumed, so no time was lost in trying to solve the vitally important problem. Composition substitutes were out of the question because, it was explained, it would be impracticable to use a flashing that would last five or ten years with a slate roof that would outlast the life of the building. Slate was the only thing that would answer the purpose. To bevel or otherwise cut ordinary roofing slate, which is but 3/16ths of an inch thick, to fit in a valley was impossible.

Varied experiments along this line helped but little to solve the problem, so the operators decided to lay their troubles before Mr. Munro, one of the owners of the Inlaid Slate Company, which concern has been a leading factor in the development of flat slate roofs.

Mr. Munro quickly grasped the idea as to what was wanted and lost no time in perfecting a device. The basic principles of the flat slate roof were applied and the new device will be manufactured in the plant of the Inlaid Slate Company. Three-ply standard government roll roofing, similar to that used for roofing the army cantonments, will be surfaced by 3 x 6 slate, washed, heated to 200 degrees and applied under heavy pressure caused by steel rollers. Under this material will be placed a strong backing of burlap and an asphalt mixture guaranteed not to melt at less than 400 degrees Fahrenheit. The new flashing will be cut in strips of usual width and a small hinge will provide for adjustment to any angle.

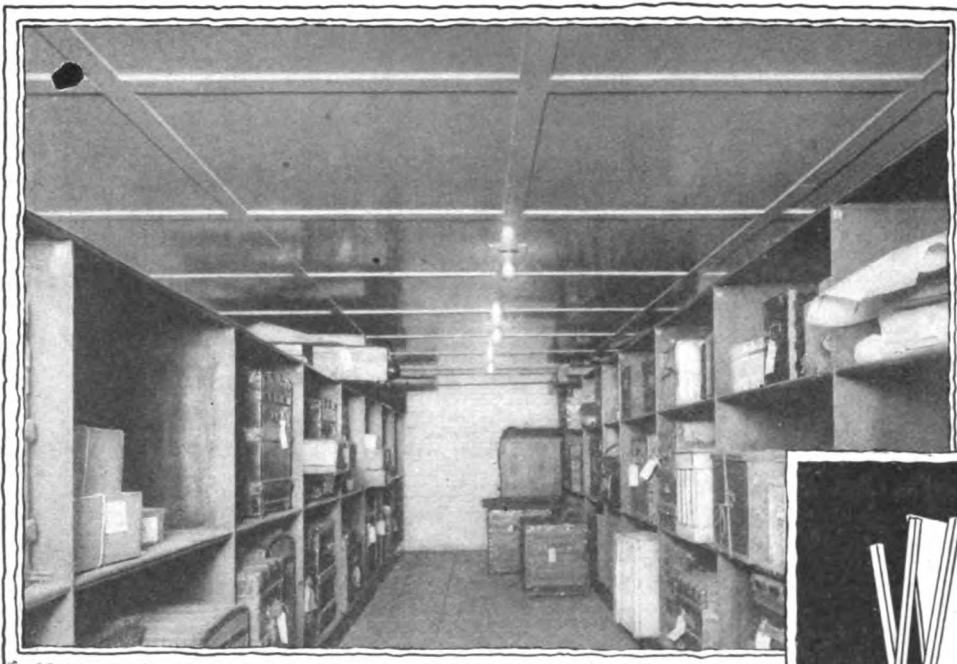
That this device, made possible only by Mr. Munro's ingenuity and long experience in this field, will supersede the old-style metal flashing goes without question. Its cost is less than one-half that of metal and, like the roofing slate, it requires no repainting and practically no repairs. The advantage of an "all slate" roof is not to be underestimated and it is hoped that the slate manufacturers will lend their hearty co-operation to Mr. Munro and use their efforts to make this war-time necessity a permanent feature of slate roofs.

### **"Waste" Utilized**

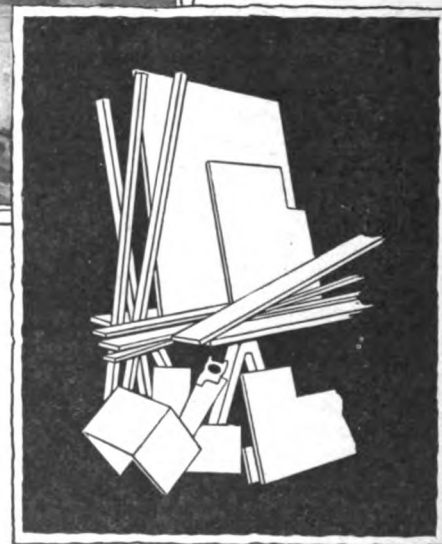
In the manufacture of this new product only the small "waste" pieces of slate are needed to supply the 3 x 6 slates, which fact partly accounts for its low cost. Special machinery, also designed by Mr. Munro, is used throughout the process of manufacture.

The Bureau of Standards officials, under whose direction the invention was subjected to an exhaustive test, are so pleased with the solution of the problem that the use of slate flashings with tile roofs has been recommended for the government projects specifying that material. Mr. Munro was encouraged to further experiment with a view of perfecting a slate flashing that would serve to replace copper flashings now used on slag roofs. Thus slate is given an added prominence in the roofing industry.

This resourcefulness on the part of Mr. Munro and the slate operators has secured for them the appreciation and the hearty co-operation of the government officials. It may be safely stated that the slate industry will be aided very materially by the government contracts, which, if no satisfactory substitute for metal flashings had been found, would have gone to manufacturers of composition roofing in districts far removed from this county.



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**LATEST  
EDITION**

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New York City, N. Y., November, 1918

**Priceless**

## Keep Your Goods Before the Public

The editor of "Sheet Metal" asks seriously what is to be done about the future of the tin roofing industry. He says:

"With such trouble being experienced in procuring tin and terne plate for commercial purposes the sheet metal contractor frequently is in a quandary to know what policy to pursue toward the tin roofing industry. He has been told that the Government needs practically the entire output of the tin plate mills to take care of the food packs for ourselves and for our allies. He wants to act loyally, and the sheet metal trade has given undeniable evidences repeatedly of its unquestionable loyalty. He sees in present conditions the very foundations of his business threatened, and he is naturally interested in knowing how best to act to protect his country's best immediate interests and preserve a basis for his business for the future. Must his policy be one of offensive, defensive, rear guard, retreat, or surrender? Must he forget his future welfare and devote all his energy to the one great cause, or shall he do just as much for the cause and use some surplus energy in preparing for the days to come?"

And to his own question he gives this answer:

"Certainly tin roofing must not be forgotten, but no material, no matter how superior, can unaided hold its own against the present aggressive policy of the substitute roofings. The buying public must be told about these advantages of tin roofing or with the continuous efforts of the enemy the owner will be won over. Even if the sheet metal contractor has no roofing to sell he should never for a moment forget to laud it as a roof covering to his customers. He can tell them what a good roofing it is, can get them to want it, and by telling them they cannot have it now can make them want it all the

more when the war is over. In this, as in war, the best defense comes from an offensive policy, and certainly such an offensive policy in behalf of tin roofing would be far from unpatriotic at this time. It is a time to be on the offensive or at best on the defensive, but it is no time for retreat or surrender."

A description of the manner in which Derby trucks are made and the variety of uses to which they may advantageously be put is supplied in the new catalogue of the Derby Motor Trucks Company, Detroit, Mich.

The latest of the many attractive booklets issued by the Atlas Portland Cement Company, of New York City, treats of the uses of cast stone, and will be found of unusual interest to architects, contractors and others concerned in modern building possibilities.

In the important matter of fire resistive shingles much valuable information is supplied by the new booklet put forth by the Flintkote Manufacturing Company of Boston. For years this corporation has been studying the roofing question and its product has attained widespread popularity.

## Heads Portland Cement Ass'n.

In succession to H. E. Hilts, resigned, William M. Kinney has been appointed general manager of the Portland Cement Association. Mr. Kinney has long been identified with the cement industry, his most recent connection having been as head of the promotion bureau for the Universal Portland Cement Company. Associated with a number of engineering societies, he is credited with being largely responsible for the establishment of the Structural Research Laboratory at Lewis Institute, Chicago.

## Meets Rigid Test of Federal Government

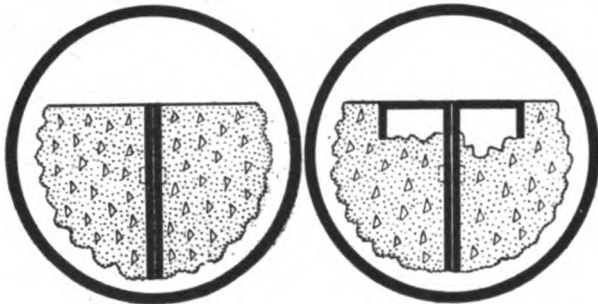
To meet the exigencies of war conditions buildings are frequently erected both of materials and according to designs that would not be tolerated normally, and much work of this character has been performed in this country during the past eighteen months, where the authorities were forced to take whatever was available for the purpose of speedy construction.

In its buildings of a permanent character however, the Federal Government calls for the highest grade of product, and insists that these shall have withstood rigid tests. Because of this requirement the liberal use of the "Almetl" fire doors and shutters, manufactured by the Merchant and Evans Company, of Philadelphia, for use in the extensive plants of the Merchant Ship Building Corporation, Detroit Ship Building Company, Pusey and Jones Company, as well as for the various arsenals, Panama Canal zone buildings and the various air nitrate plants controlled by the Government, is a singular tribute to the quality of the "Almetl" product.

As the Evans "Almetl" fire doors and shutters are constructed entirely of steel and fireproof asbestos, there is absolutely nothing to burn and they are so rigid, strong and sturdily built that when properly erected, they should last without abuse as long as the building itself.

Evans "Almetl" fire doors and fire shutters are not only fully approved by the Underwriters' Laboratories of Chicago and the Factory Mutual Laboratories of Boston, but have been additionally endorsed by over 250 National, State and municipal officials directly interested in fire protection and, prevention affairs.

## The Fireproofing News



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#### Wear Tests of Concrete\*

Concrete is widely used in the construction of floors, pavements, walks, loading platforms, and for other purposes requiring high resistance to impact and abrasive stresses. Such uses of concrete have emphasized the necessity for more complete information concerning the factors which affect the wearing resistance of the material. This information is being secured by means of experimental studies in progress at the Structural Materials Research Laboratory which form a part of the research work on the properties of concrete and concrete materials being carried out jointly by the Portland Cement Association and Lewis Institute. Several thousand wear tests have been made during the past three years; other studies of a similar kind are now under way.

\*By Duff A. Abrams, Professor in Charge, Structural Materials Research Laboratory, Lewis Institute, Chicago.

With cement meeting standard specifications and high-grade aggregate, mixed in definite proportions, the maximum resistance to wear can be secured by the following methods:

(1) Reduce the mixing water to the smallest quantity which will produce a workable concrete;

(2) Provide proper curing conditions so that concrete will not dry out too soon or be injured by traffic before thoroughly hardened;

(3) Thoroughly mix the concrete.

Too much emphasis cannot be placed on the fundamental importance of proper control of mixing water. In many instances a large proportion of the cement is simply wasted, due to the use of too much water in the concrete. Tests made in this laboratory have shown that in a 1-sack batch each pint of water more than necessary lowers the strength of the concrete and its resistance to wear, the same as if

we should omit 2 to 3 pounds of cement. The "sloppy" mixes frequently seen in floor and road construction may give concrete of less than one-half the strength and resistance to wear that should be secured at the same cost if proper care were given to proportioning the water.

It is impracticable to state in general terms the exact quantity of mixing water which should be used, since this depends on several factors, such as quantity of cement, kind, size and grading of aggregate, moisture contained in aggregate, etc. For the mix generally recommended for use in road construction, that is, 1 volume of cement to about 4 volumes of mixed aggregate (aggregate graded up to 1½ or 2 inches), the water necessary to produce a workable mix will vary from 5½ to 6 gallons for each sack of cement. Other factors being the same, the full utilization of the cement in the con-



crete depends entirely on the use of the smallest quantity of mixing water which will produce a concrete of satisfactory plasticity.

Increasing the quantity of cement in the concrete or improving the grading of aggregates is effective in increasing the resistance to wear only in so far as we are enabled thereby to reduce the quantity of water as compared with the cement in the mix.

Ample moisture during the curing period is second in importance only to the use of a proper quantity of mixing water. The tests show that unfavorable curing conditions produce exactly the same effect as too much mixing water. However, the former factor is not at present subject to the same abuse as the latter. Many floor jobs are ruined due to failure to supply moisture for a few days after placing the concrete. The "ponding" method furnishes ideal conditions for the curing of floors and roads. A good rule to follow is: "Mix with the smallest quantity of water that will produce a plastic concrete, then supply as much water as possible for curing."

Traffic should be excluded until the concrete is thoroughly hardened; the length of time required will depend on the nature of the work and the weather. Not less than one week should be allowed for curing in any case; for roads for vehicular traffic this time should be extended to 10 days or 2 weeks; under unfavorable conditions one month or longer may be necessary.

The concrete should be mixed in a batch mixer for a full minute after all materials are in the drum. The resistance to wear is materially lowered by undermixing. There is no danger that concrete will be mixed too long. However, it has been clearly shown that no reasonable increase in the mixing period will counteract the ill effects of too much mixing water.

Wear tests of concrete were made in the Talbot-Jones rattler. The test pieces consist of blocks 8 inches square and 5 inches thick. The blocks are arranged around the perimeter of the drum of the rattler; the ten-side polygon formed by the test blocks presents a nearly continuous surface. The outside diameter of the polygon is 36 inches and the inside diameter is 26 inches. During the test the

front of the chamber is closed by means of a steel plate. The abrasive charge consists of 200 pounds of cast-iron balls (about 133, 1 7/8 inches and 10, 3 3/4 inches in diameter).

The test consists of exposing the inner face of the concrete blocks to the wearing action of the abrasive charge for 1,800 revolutions of the drum at the rate of 30 r. p. m. The machine is run for 900 revolutions in one direction, then reversed. Duplicate rattler heads enable us to test two sets of blocks at the same time. For research work in studying the effects of varying the proportions and consistency of the concrete, each block is made from a small batch of hand-mixed concrete. The specimens are molded in metal forms and finished with a wood float. Each block is weighed immediately before and after testing. The loss in weight is used as a measure of the wear. This loss is reduced to an equivalent depth of wear in inches.

Tests are now under way which are expected to bring out the relative merits of different aggregates for use in the construction of concrete floors, walks and roads.

### Revised Building Code of Wisconsin

In view of the expected increased building activity the industrial commission of Wisconsin has prepared a new edition of the state building code, containing the amendments which became effective Sept. 15, 1918. This code replaces the old state building code which has been in effect since 1914.

The new code is framed with special reference to avoidance of disastrous fires, as well as to secure reasonable safety and sanitation. It is declared there have been few disastrous factory or apartment house fires in Wisconsin, but that there have been many such fires in other states, which might have been prevented had the buildings been properly constructed. In Wisconsin there have been a number of cases in which poorly constructed buildings have collapsed with resulting loss of life. It is to guard against such dangers that a state building code was adopted, and it has the support of all progressive architects and builders in the state.

The amendments in the new code

are quite material. They require that plans for all buildings other than one and two-story dwellings must be submitted to the industrial commission for approval, not merely plans for hotels, schools and theaters as heretofore. There are also new requirements as to fire escape construction, chimney construction, flue construction, electric wiring and rules as to dry cleaning establishments, garages, theaters in small towns, apartment houses and schoolhouses.

Upon request from employees in the industry for an up-to-date set of rules governing compressed air work, the New York Industrial Commission has appointed a special committee to assist the Code Commission.

### Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912,

Of "Construction," published monthly, at New York, N. Y., for October 1, 1918.

State of New York.

County of New York, ss.

Before me, a Notary Public, in and for the State and county aforesaid, personally appeared G. A. Watson, who, having been duly sworn according to law, deposes and says that he is the Editor of the "Construction," and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, Construction Pub. Co., 95 William St., New York.

Editor, G. A. Watson, 95 William St., New York.

Managing Editor, None.

Business Manager, G. A. Watson, 95 William St., New York.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent. or more of the total amount of stock.)

G. A. Watson, 95 William St., New York.

L. C. Watson, Cranford, N. J.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent. or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

None.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

G. A. WATSON, Editor.  
Sworn to and subscribed before me this 8th day of October, 1918.

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(My commission expires March 30, 1919.)

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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
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George A. Watson, Editor  
Bruce E. Loomis, Ins. Eng. Editor

Ralph P. Stoddard, Associate Editor  
Wm. Wallace Ewing, Consulting Eng.

Volume Seven

Number Six

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L. C. Watson, Sec.-Treas.

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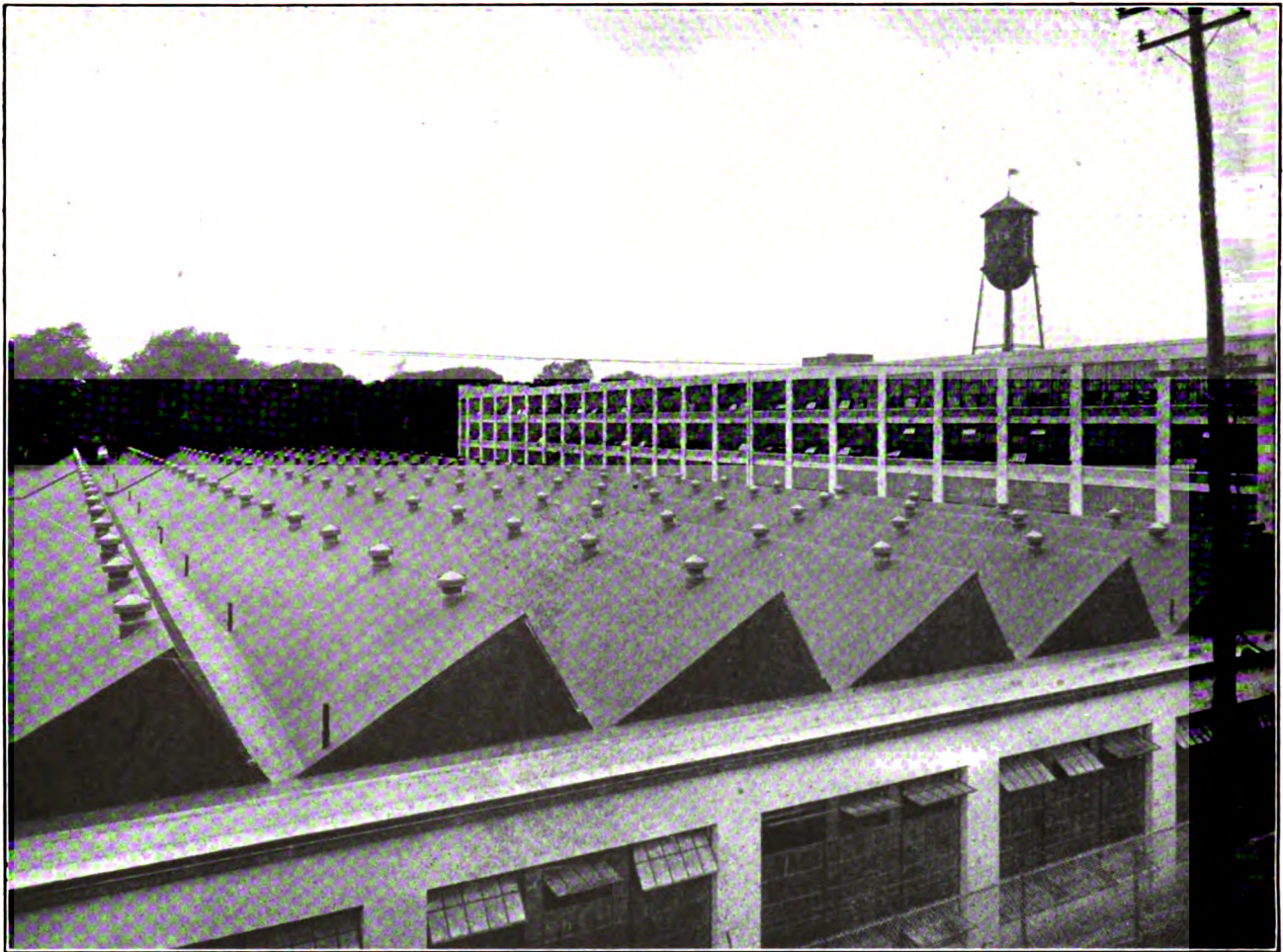
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# CONSTRUCTION

ADVOCATING THE CONSISTENT USE OF  
FIREPROOFING MATERIALS & PROTECTIVE DEVICES

VOL. VII

DECEMBER, 1918

No. 6

## Need For Further Educational Effort

QUOTING from a recent letter by Robert F. Hall, general manager of the Lime Association, we learn that: "One of the members of Committee C-7 on Lime of the A. S. T. M. has made a thorough examination of the present building codes of many first and second class cities and has compiled a preliminary report of the standing of lime in such codes. \* \* \* It is apparent that many code writers have not had a proper understanding of the properties of lime and its true value, both structural and economic."

That code writers in days gone by have not been sufficiently informed either as to the properties of lime, is undoubtedly true, and the same charge may safely be applied to cement, gypsum, hollow tile, and other building properties, hence their inability to prepare ordinances that stand the test of expert analysis.

That such condition obtained in the past and to a degree still exists, is due in large measure to the manufacturers of leading building products themselves, in that they seldom exerted themselves to furnish municipal officers or code writers with data that not only was illuminating but was wholly reliable as well. Too often the manufacturer endeavored to advance his particular product at the expense of all other types of material, and even disparaged the output of his competitors in the same line, with the result that code men not only became suspicious but frequently hostile to the interests that sought to bias unfairly their judgment, and the industry suffered as a whole.

Fortunately, conditions have changed materially in this respect in recent years; the foremost classes of building product—cement, stone, steel, brick, metal lath and the like, have well organized associations, employing competent engineers whose services are at the call of all municipal authorities and others properly seeking enlightenment upon building questions.

Through the intelligent work of association men, not only have code writers been enabled to obtain data previously beyond their knowledge and have

used such information to the advantage of their respective committees, but the producers of standard building materials have been greatly benefited as well, attesting again the truth of the old adage that "it pays to play fair."

## Wood Shingle Menace at Des Moines

DES MOINES, Iowa, according to Howard S. Phelps, electrical engineer for the Iowa State Railroad Commission, should give immediate and earnest attention to the wood shingle roof hazard of the city, and take steps for its improvement.

The combination of wood shingle roofs and deep overhanging eaves, as it exists in Des Moines, in the opinion of Mr. Phelps, affords the best possible avenue along which a fire might travel, and experience has proven that most of the serious conflagrations that have occurred in this country were largely the result of just such a combination.

Manufacturers of wood shingles constantly seek to minimize the fire hazard of their product, but the facts are all against them, and numerous cities and towns appreciate the situation, and by ordinance enactments have prohibited the use of any save fire-retardant roof coverings within their respective communities.

Will not the authorities of Des Moines, an otherwise progressive center, be warned in time, and profit by the lessons taught by the fires of Salem, Chelsea, Paris, Augusta, Nashville and a long list of other cities?

## To Rebuild Destroyed French Villages

FIVE thousand men will be recruited in this country and taken to France and Belgium by the Lynch Construction Company of New York City, to rebuild destroyed villages in the war-swept areas.

Plans of the French High Commission call for the rebuilding in thoroughly modern style and with all the latest sanitary devices.



### Individual Responsibility for Fires

**U**NDER a new ordinance it is unlawful in Portland, Oregon, according to Fire Marshal Edward Grenfel, for any person to maintain or to permit upon any premises controlled by them, any conditions that constitute a fire hazard. Whenever the Bureau of Fire ascertains that there exists on any premises in the city a condition which constitutes a fire hazard, the Bureau notifies the person in charge and orders the condition corrected. In case the notice is not promptly complied with, the person notified is guilty of a violation of the ordinance, and in case of fire resulting directly or indirectly from failure to remedy such condition, the offender is liable to a civil action for the payment of all expenses incurred by the city in extinguishing any fire resulting from such causes. The amount of such expense is to be fixed by the Commissioner having charge of the Bureau of Fire, and is to be paid into the general fund of the city.

In order that the people may be better informed that such a law exists, each inspector has been given a copy with instructions to advise the people on his tour of inspection. The knowledge that they are subject to arrest and fine for failure to abate the fire hazard and are also liable to the city for the cost of extinguishing such a fire, should it occur, has been a great help in obtaining results. We have not yet had occasion to put this ordinance to the test, but its existence on the statute books is already proving very helpful to this department in its work of fire prevention.

### Oppose Housing by the Government

**B**ITTER opposition to government housing, now that the war is over, is cropping out in Congress. This opposition was latent while the war was on, but now that peace is assured, it is beginning strongly to reveal itself.

In reality, this antagonism is closely identified with the antagonism which exists among powerful elements in Congress to various forms of government activity in fields which they believe should be reserved for private capital and interests.

The investigation into the affairs of the housing corporation which has been begun by a sub-committee of the Senate public buildings committee, headed by Senator Reed, has served to illuminate the sentiments of a number of senators who are eager to head off what they consider the unwarranted intrusion of the government into private fields of endeavor.

#### Hotel Is An Issue

A most striking case of this kind relates to the plans for housing women war workers in Washington. The housing corporation, of which Otto M.

Eidlitz of New York is director, and which is under the Department of Labor, has about completed twenty-four dormitories and accessory buildings on the plaza between the Capitol and the Union Station. These will house 2,000 war workers—women and girls—and house them comfortably at low figures. As described by Mr. Eidlitz, this project would be “a great government hotel, one of the largest hotels in the country.”

The buildings will soon be ready to occupy. The war workers in Washington, it is a notorious fact, have for months been charged exorbitant and outrageous prices for rents and meals.

The government hotel for women and girls, it is planned, will provide a war worker a room and two meals per day for the moderate sum of \$45 per month. This is far below the general level of prices the war workers are compelled to pay private parties.

Despite the fact that the war has practically ended, there is still a congestion of war workers here and rooms for them are at a premium. The housing corporation intends to go ahead, finish the project for the “government hotel,” and rent the rooms to the workers for the government. The contract price is about \$1,800,000. The hearings, which are now on, have served to develop feeling among senators that the whole project either should be scrapped or finished and rented to some private concern. One suggestion is to convert it into a hospital.

Senators Reed and Hardwick thus far have indicated they are both opposed to the “government Hotel.” They hold the government should keep out of the “hotel business,” and that housing construction should either be promptly stopped, or projects finished and converted to some other than government housing purposes. This is the sentiment of a number of others in Congress and is felt regardless of the minimum, well-known fact that the population of government workers here will be abnormally large for some months to come.

To the Turner Construction Company, of New York City, has been awarded the contract for the erection of a four-story reinforced concrete building, 50 feet by 102 feet, by the American Woolen Company, as an addition to the Puritan Mills at Plymouth, Mass. Plans for the building were prepared by Architect W. B. Knowlton.

At an estimated cost of \$1,260,000, a new building to be known as the Insurance Exchange, will be erected at Des Moines, Iowa. The structure will be twelve stories in height, of concrete faced with white or Bedford stone, and will be built in two units separated by a wide court from the front.

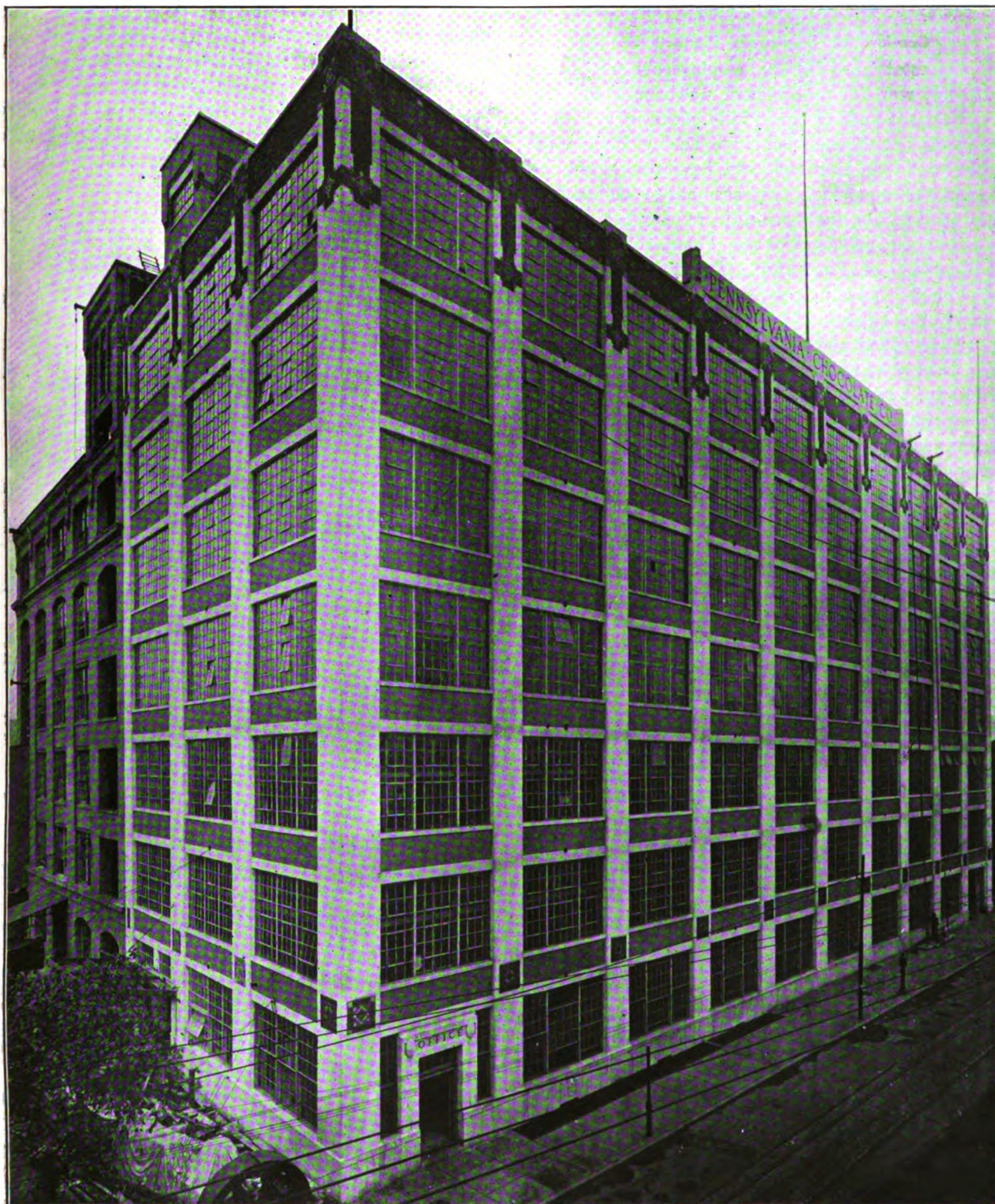


## ***The Modern Fireproof Manufacturing Building of the Pennsylvania Chocolate Company, at Pittsburgh***

By WILLIAM E. GROBEN-BALLINGER & PERROT, Architects & Engineers, Philadelphia, New York.

ONLY within very recent years has the manufacturer given serious thought to employing an architect to design his industrial establish-

ment. Formerly, such professional services were not thought necessary to secure the most economical and practical plan, machinery layout, design and con-





struction, for factory buildings, warehouses, etc. Purely utilitarian structures of this sort were considered to be entirely within the province of the ordinary contractor.

Today, these conditions are reversed. Wide-awake manufacturers insist upon obtaining the best architectural advice in such matters. They realize that, to obtain the maximum in production and the utmost efficiency from their employees, their buildings cannot be ignored architecturally.

#### Comfort of Employees Planned For

It is an established fact that employees produce more and better work in well-lighted, well-ventilated, sanitary, hygienic and architecturally pleasing surroundings than when these elements are lacking. Ballinger & Perrot, architects and engineers, have recognized and grasped the opportunities presented to embody all these features in the fireproof, reinforced concrete manufacturing building for the Pennsylvania Chocolate Company of Pittsburgh. The accompanying illustration shows both the old and new buildings of the Pennsylvania Chocolate Company. The older building was designed and built by the firm twelve years ago. Since that time the growth of the business required the new addition shown. These two buildings are interesting as showing the development and improvement made in both design and construction during the intervening period of a dozen years.

In the new structure every foot of floor space was allotted preparatory to erecting the building, with a view to installing the machinery for affording the greatest possible production within the space. This fact alone required a detailed study of all apparatus used in cocoa and chocolate manufacture. It was necessary to compare the various makes of machines for each process; and, where existing types did not fully meet the requirements as to floor space, quality of production, or efficiency and cost of operation, the architects and engineers were obliged to design special machines to accomplish those results.

The important feature of temperature control accounts for many of the floors being equipped with two complete sets of windows to facilitate, in some instances, the process of heating, and in others, that of cooling the atmosphere.

As the power plant of the old building was inade-

quate for the increased demand, and as war conditions rendered it impossible to obtain additional power from the local electric company, it was necessary to erect a new power house. This is located on an adjacent lot, and is nearing completion. A unique feature of this power house is the arrangement of the boiler and engine rooms. The former is located over the engine room. Above the boiler room is a coal bunker having a capacity of 500 tons. The stokers for the boilers are fed directly from this bunker, which in turn is filled by a chain conveyor which carries the coal up from the track bins under the railroad siding. The equipment includes, also, an automatic ash handling device. This power house is connected with the buildings illustrated by a tunnel under the street, through which are carried all wiring, steam and water piping.

In the basement of the new building a 100-ton refrigerating plant has been installed to supply the various cold rooms, and special apparatus. The water for this system is used repeatedly, being cooled by a cooling tower on the roof.

#### Pleasing Architectural Effect

The architectural treatment of the new building is very pleasing and has been obtained at a considerable saving in cost by the elimination of all useless embellishments and depending solely upon the use of tile patterns of a harmonious, yet simple, color scheme in combination with the brick veneering over the concrete. The interior walls, above the chocolate colored dado, and the ceilings have been painted a gloss white, which, with the large windows give the maximum amount of daylight.

A feature of especial interest is the sign which surmounts the parapet. It is entirely of concrete and has been designed as a coherent part of the facade, in contradistinction to the usual procedure of forcing the manufacturer to advertise both his business and his building by erecting such monstrosities as the signboards ordinarily used.

Although severely plain, in recognition of its purpose as an industrial establishment and because of its strictly utilitarian limitations of simplicity and economy of construction, this building is unusually creditable both commercially and architecturally.

Several large steel corporations in the vicinity of Pittsburgh propose erecting a large number of houses for their workers, the Carnegie Steel Company alone planning to build several hundred homes. Architect George H. Schwan, of Pittsburgh, is planning a housing program for an industrial plant at Butler, Pa.

The present building program of the Pittsburgh

(Pa.) Board of Education embraces the erection of five new school buildings, and a number of additions and improvements.

Stubling and Lum, architects, of Columbus, Ohio, are working upon plans for a \$300,000 hospital in their city.

## *The San Francisco Civic Center*

(From The American City)

**S**AN FRANCISCO voted \$8,800,000 of bonds through which to provide lands for and help create one of the noblest groups of public buildings in America. The total cost, including land and construction will exceed \$16,800,000.

The site lies in a general easterly direction from Van Ness Avenue, between McAllister and Grove Streets to Hyde; and the median line of it, which is Fulton Street, extends a block beyond, to the junction of Fulton and Market. The two blocks between Polk and Larkin running from Grove to McAllister form a beautiful plaza with ornamental shrubbery and a bandstand, and about it are the Municipal Auditorium, the Public Library, and the City Hall. A state building will also be erected. The architects for the civic center are John Galen Howard, Fred Meyers and John Reid, Jr.

### **The City Hall**

The central feature of the new San Francisco civic center is the City Hall. The site of this building covers two blocks between McAllister and Grove Streets and Van Ness Avenue and Polk Street. The building and its surrounding approaches, steps, terraces and gardens cover this whole site.

The main architectural feature of the City Hall is an immense dome 110 feet in diameter, about 14 feet less than the diameter of the dome of the U. S. Capitol at Washington. The top of this dome is 300 feet above the street, about 10 feet higher than the dome of the Capitol.

### **The Municipal Auditorium**

The second great building completed in the civic center is the municipal auditorium, which was built by the Panama-Pacific International Exposition at a cost of \$1,275,000. Every effort has been made to make this building useful and convenient in a multitude of ways. The main auditorium will seat ten thousand people, five thousand on the floor and five thousand on a single great sloping balcony so arranged in relation to the ground floor as to give the impression almost of a great saucer. The roof of the auditorium is a vast octagonal pyramid supported on open steel trusses. The light for this great room, which measures 250 feet across, comes from the ceiling. The entire hall is surrounded by spacious corridors. There are forty-one exits on the ground level, and twelve wide staircases enable persons in the balcony to reach the ground level with the greatest convenience and dispatch. There is a large portable stage in connection with the main auditorium which can be folded and

stored under the regular stage. The magnificent pipe organ which was in Festival Hall during the Exposition is one of the features of this building.

In addition to the auditorium proper, the building contains spacious reception rooms and exhibition halls. Arrangements have been made which adapt the entire structure, with a minimum of labor, to such uses as concerts, balls, receptions, banquets, skating-rink, horse show, circus, pageants and almost any conceivable kind of gathering.

### **The Library**

The third building to be completed in the civic center is the library. It is situated at the intersection of the easterly line of Larkin Street with the southerly line of McAllister Street, its main facade being on Larkin Street, facing the civic center plaza. It has a frontage of 190 feet, is 305 feet in depth, and is Italian Renaissance in style. Its steel frame is faced with California white granite, to harmonize with the City Hall and the other civic center buildings. The walls of the corridors are of travertine marble.

The building, complete with furnishings and equipment, cost \$1,153,000. One of its exceptional features is a spacious music room, containing a large assortment of music, with piano accommodations for the public. Rest rooms, dining-room and kitchen facilities have been provided for the women attendants. The main stack room has a capacity of 500,000 volumes, with arrangements for increase when desired.

### **More Public Schools for Buffalo**

Under the new building program adopted by the Board of Education, of Buffalo, N. Y., nearly twelve million dollars will be spent in the purchase of land and the erection thereon of school buildings. The need for additional structures is acute, little in this direction having been done during the past two years.

Architect George H. Schwan, of Pittsburgh, is preparing plans for the erection of nearly a hundred houses at Jeannette, Pa.

At an estimated cost of \$800,000 a new hospital will be erected in New York City in the near future, upon plans drawn up by Architect H. P. Knowles.

Bids are being sought for the erection of a home for David H. Coplon, Amherst, N. Y. Plans were prepared by Architect L. Greenstein, Buffalo, who figures the work will cost about \$100,000.

## Precautions Against Freezing of Fire Appliances

**A** WARNING is sent out by the National Fire Protection Association to the effect that unless extreme vigilance is exercised the very best installation of fire appliances may suffer temporary disablement from frost. Automatic sprinkler systems, hydrants and all appliances using water for fire extinguishment naturally require special care and attention in winter. The following precautions should be taken; inspections being thoro, with nothing taken for granted:

1. Ascertain if all portions of buildings are properly heated at all times to prevent freezing in any of the sprinkler pipes, particular attention being given to exposed places, such as hallways, entries, stair towers, under sidewalks, show windows, shipping rooms, attics, roof monitors and skylights.

2. Examine tanks and all pipes, fittings and valves, whether for steam heating, general water service, or fire prevention. *See that none is frozen* or has been frozen, and that they are *all in operative condition*, and where there is any liability of freezing, provide the necessary protection. All metal work supporting tanks, also tank hoops, should be thoroughly cleaned from rust and painted.

3. Examine carefully and provide suitable boxing around any pipe line which may be in an exposed location (between ground and first floor, between buildings, or near windows, doors, etc.). Make frequent tests during the winter of such sprinkler system in order to make sure the piping is not frozen.

4. Ascertain whether sprinkler dry valves are in working order, not leaking, and piping thoroughly drained; whether alarm connection and gong are in order; whether air pumps can be depended on for the winter.

Note.—Do not overlook low points on dry system not controlled by main drain. Blow low points out occasionally to free from condensation.

5. See that *all valves are open that should be open*, and try water outlets to ascertain if all pipes are free and ready for service.

6. See that *extra sprinklers* are on hand in case of need to replace frozen or melted heads.

7. Be sure that engineer or supervising employe is fully posted as to the purpose and intention of every valve and pipe.

8. Try pumps and see that they are in proper working order.

9. Test all the *hydrants* and *indicator posts*, and see that they *drain properly*.

10. Examine inside stand-pipes and connections.

11. *Instruct the night watchman* thoroughly in the use of all fire apparatus and the operation of all valves.

12. Examine the end of suction pipe to see that leaves or other refuse matter have not clogged up the

holes in the strainer. The capacity of the pump may be greatly reduced by this defect.

13. Take measures to prevent freezing of water in casks and pails in cold buildings.

14. Empty and recharge chemical extinguishers to insure their being in perfect working order.

A thoro examination should be made of the entire heating system before putting it into service. All heating pipes should be carefully brushed down, and where piping is located along walls, any rubbish or litter which may have accumulated should be removed and pipes kept free from dangerous contact with walls, partitions, etc.

When it becomes necessary to close a sprinkler valve during working hours, a competent man should be stationed at the valve, so that the water can be turned on immediately in case a fire occurs.

When necessary to make changes in sprinkler system, extra care should be taken to have the least possible portion of the equipment out of commission at one time.

Whenever it is necessary to shut water off sprinklers, or in any way modify the fire protection, the inspection department having jurisdiction should be first notified.

## Inspecting Chimneys

**J**AMES McBeth, inspector Fire Prevention Bureau, St. Joseph, Mo., advises of one admirable means adopted in his city for reducing the fire hazard: "Under an ordinance specifically creating the position, St. Joseph's official chimney sweep not only sweeps the chimneys of the city, but also inspects them and either repairs or reports all defects in flues to the Building Inspector or the Fire Warden for immediate attention. The ordinance requires that all chimneys within the limits of the city which have been in use at least six months shall be cleaned by the chimney sweep, who is paid by the owner of the building 25 cents per story for each chimney cleaned. Upon the owner or the occupant of a building is laid the duty of having the chimneys cleaned, under penalty of a fine. The official chimney sweep must pay a license fee of \$50, besides being put under bond.

"The official chimney sweep is not an experiment. It is an old-time European system transported to this country, but seldom enforced as it should be. We have had very good results here, and the situation is getting better all the time as far as the removal of fire hazards in flues is concerned. We are operating on the theory that the best way to conserve building material is to save the buildings themselves."

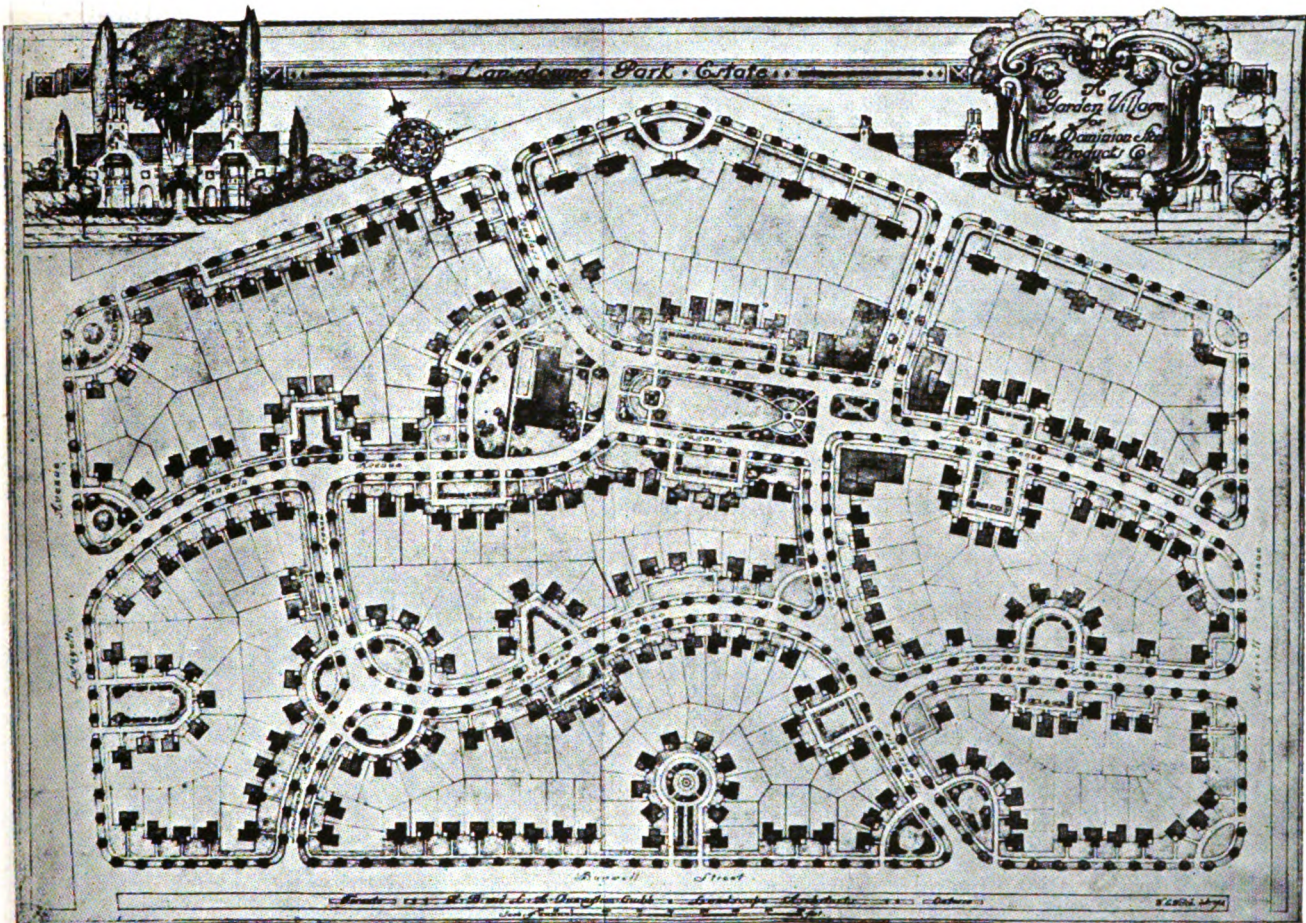
An extension to its already large building on Beaver Street, New York, has been decided upon by the prominent banking house of Brown Brothers & Co.



## Comfortable and Firesafe Homes for Workmen

**T**HAT it pays from every standpoint to not only supply sanitary, substantial and comfortable properties for men to work in, but to furnish them with thoroughly modern and attractive dwellings as well, is now an accepted truism in industrial circles, as a result of which the old type of disease and accident breeding shop and barren looking and un-

prated about only, the "dignity of labor" should be a self-accepted fact. They have, first of all, supplied in their daylight plant, a work environment which gives the men roomy, well-lighted and ventilated apartments in which to do their jobs. These skilled workmen are surrounded with every modern facility to enable them to work to a high standard, and realiz-



Park Like Sub-division in Which the Dominion Steel Products, Ltd., is Erecting Comfortable Homes for Its Men

comfortable "home" is rapidly being displaced in all progressive manufacturing centers.

A notable example of this forward trend is supplied in the plant of the Dominion Steel Products, Limited, of Brantford, Ontario, Can. Created less than three years ago, this progressive property, "with six million dollars of business upon its books, has a battery of 'daylight' plants covering six acres of ground, its buildings containing 85,000 square feet of floor space, and represents an investment of over \$1,000,000."

The conception of the directors of Dominion Steel Products, Limited, appears to be that instead of being

ing that a fine workman deserves a fine home, the corporation is now building, within easy distance of the plant area at Brantford, a "model village" for its men and their families which, after completion, will be an object lesson to every employer in Canada, if not on the continent.

To provide homes that will make for the comfort of the workmen and their families, the Dominion Steel Products, Limited, purchased a tract of 40 acres of land, within easy distance of the factories, and yet sufficiently remote that its activities will not be objectionable in any way. Artistically laid out, as will be noted in the accompanying illustration, the "park"





## Fire and Water Resistant

The above reproduction graphically illustrates the fire-resisting qualities of

## Ambler Asbestos Corrugated Roofing and Siding

It shows part of a large industrial plant destroyed by fire and an adjoining building covered with Ambler Asbestos Corrugated sheathing which was unharmed by the flames. In this instance as in many others, our Corrugated Roofing and Siding proved to be better than an insurance policy.

Besides being fireproof it is sufficiently elastic to allow of marked tension due to vibration, expansion and contraction of surrounding parts, wind pressure, etc., without cracking or breaking in any manner. Once put on, it stays on as long as the building stands, and it never needs painting or repairs. the first cost is the only cost entailed.

### The Ideal Skylight

We have manufactured exclusively for us a Corrugated wire Glass to be used for skylights in conjunction with Ambler Asbestos Corrugated Roofing. It makes a non-leakable fireproof skylight. Easily put into place and is much more economical than other types of skylights.

*A word from you will bring the whole story—prices, pictures and samples.*

**KEASBEY & MATTISON COMPANY**

DEPT. B-3,

AMBLER, PA., U. S. A.

Manufacturers of Ambler Asbestos Shingles, Asbestos Corrugated Roofing and Siding,  
85% Magnesia Pipe and Boiler Covering, and Asbestos Building Lumber

was arranged by a noted landscape architect, and follows the modern idea of winding avenues instead of straight streets.

#### Houses of Hollow Tile and Stucco

The houses, of which finally no less than 238 will be built, are being constructed of hollow fireproof tile finished with stucco. Already some thirty-five of

chanic and his family on payment of from thirty to thirty-five dollars per month. The rents to be paid by employees will have a definite relation to their scale of wages. If the recent high war wages have to be at any time reduced, in conformity with the scale throughout Canada, then the house rents will come down proportionately. Any employee who has been



Detached Houses Showing Group Arrangement



The Houses Bespeak Comfort and Sanitation

these houses are now built, but are not yet all ready for occupation. Any employee of Dominion Steel Products will be allowed to rent one of these houses, of the size and type most adapted for his needs. The investment in this model village on the part of the

with the company two years or more may, instead of merely leasing his home, purchase it outright at its actual cost on terms to be arranged between him and the company. The houses are well designed, built of the best material, contain electric light, spacious



Another Type of Individual House



Note the Substantial Character of Construction

corporation will be about \$450,000 for the first one hundred houses. The rentals to be charged employees will be based simply on the carrying charge of the whole property. The corporation has not yet struck its scale of rents, but the indication now is that one of these beautiful homes may be occupied by a me-

bathrooms, polished floors, and an electric stove in the kitchen. Each house combines, as a house should do, beauty with utility. As for the village itself, when it has settled down and blossomed into its own, it will be one of the beauty spots of Canada—inhabited by skilled mechanics and their families.



### House Building Code for Illinois

**F**EELING that it was far behind other northern states in its home building laws, a proposed code governing the subject is now being prepared for Illinois by Lawrence Veiller, of New York City, secretary of the American Housing Association; Charles B. Ball, of Chicago, and State Senator Harold C. Kessinger, of Aurora. The measure, which will shortly be offered in the Illinois Legislature, will be modeled upon the Michigan code adopted two years ago, and which applies to all cities in the Peninsular State having ten thousand or more population.

All classes of residences, single, double and apartments, will be included. The measure, however, will not apply to hotels.

New York, appreciating the need for proper legislation governing house construction adopted a special code, nearly twenty-five years ago, since which time Indiana, Minnesota, Michigan and other states have fallen into line, each now having legislation prohibiting a form of building previously permitted, and which proved highly dangerous to human life.

Slowly the people of the country are awakening to the imperative need of enforcing a type of home construction at once artistic convenient, sanitary and safe from the fire menace.

### Would Reduce Fire Losses in Canada

**M**ANUFACTURERS of Canada are greatly exercised over the fire waste in their country, which they maintain, if unchecked, will prove a severe handicap in their competition for home and foreign trade markets.

In the five years ended December, 1917, Canada's fire waste averaged \$17,000,000 annually, while in 1918 it was nearly twice that sum. No wonder the thoughtful men of the Dominion are alarmed over the subject, and are arranging for a general meeting at which measures for effective fire prevention will be taken up, and, if it be deemed necessary, legislation sought from Parliament.

It has been suggested that the Federal Government take over the inspection of all business properties, and that trained men be employed to critically study the fire hazard involved. The expense of such procedure, it is understood, "would be considerable, but there can be little doubt that it would ultimately prove to be an act of great economy."

Among other suggestions adopted by representatives of the Canadian Manufacturers' Association for submission to the general conference upon fire prevention to be held at Ottawa later, are the following:

"In view of the great number of barns annually destroyed by fire caused by lightning and in view of the fact that lightning fires are rendered practically

impossible by the installation of lightning rods, some steps should be taken which would ensure the proper rodding of all such buildings. While legislation towards this end might be difficult, the insurance companies themselves could solve the problem by increasing the difference in rates on rodded and unrodded barns.

"It being acknowledged that a very large proportion of Canada's fire losses occur in manufacturing establishments, and that the risk of fire in such plants is greatly minimized by the installation of automatic sprinklers, steps should be taken to encourage the more general adoption of this very effective fire prevention apparatus.

"The various fire departments would be rendered much more efficient if hose and hydrant couplings were standardized throughout the Dominion. This is an action which should have been taken many years ago, but it is not too late to effect so important an improvement."

### Modern Tendency Against the Wooden House

**N**OT only is the present-day tendency "against the all-wooden house and in the direction of permanency," as the Associated Metal Lath Manufacturers claim in their recently issued attractive booklet entitled "Home Building," but the tendency is very pronounced, and is destined to become increasingly so as the general public gains further knowledge of the many advantages afforded by fire safe construction.

In advising architects, contractors and building supply men of the excellence of their respective products cement, tile, brick, metal lath, asphalt shingle and kindred associations are performing excellent work, the returns from which have been decidedly satisfactory.

For the most part, however, such informing work is confined to the larger centers; scant attention being paid to the smaller communities. The latter field is a most important one, and the associations above named as well as others interested in fire-safe construction, could well afford to spend time and money in carrying their propaganda into towns and villages where thus far little has been heard of modern building methods, and where the dangerous frame house and store is the only type of construction known.

**MASONRY CONSTRUCTION  
INSURES PERMANENCY**

## *Engineering Tests of Roof Coverings*

**J**UST how the Underwriters' Laboratories, Inc., conducts its tests of roof coverings in order to determine their respective fire resistive properties is thus set forth by George W. Riddle, assistant engineer of the establishment:

"In the investigations made it has been the aim to establish a standard that would be sufficiently broad to permit the classification of roof coverings independent of the character of the roof structure upon which they might be applied. With this in view the tests have been designed to clearly show not only the relative flammability of roof coverings, but also their relative fire retardant properties, including the ability to resist the spread of fire on the surface of the coverings, protection afforded the roof structures against exposure to high temperatures, blanketing effect upon fires within the building and also the flying brand hazard of the coverings. The effect of air currents of various velocities upon the coverings while under test was observed.

"In adopting the test methods three separate fire tests were decided upon, each of which would approximate as closely as possible actual fire conditions and at the same time be capable of being reproduced for all classes of roof coverings.

"From the results obtained under the present method of testing combustible roof coverings, radiation and hot or burning brand tests of a modified form were decided upon, and in addition to these a flame exposure test was adopted. The methods of conducting both the radiation and hot brand tests and character of the furnaces used were entirely changed from methods formerly employed, so as to assure uniform conditions and at the same time permit of the testing of the roof coverings at the angle of inclination advocated for any particular type of covering.

### **Radiation Tests**

"The radiation test decided upon consists of exposing the sample of the roof covering to be tested to the heat radiated from a steel plate heated to a prescribed temperature, and having exposed circular area 36 inches in diameter, the sample being placed parallel to and at a prescribed distance from the surface of the radiation plate. For the purpose a cylindrical furnace was designed, having a conical top and provided with a steel radiation plate at the bottom 42 inches in diameter. The furnace is composed of a steel shell lined with fire brick on top and sides, which forms the combustion chamber, and is carried on trunnions suspended from an overhead track. The radiation plate is attached to the bottom of the fur-

nace. The frame covers the edges of the plate 4 inches at all points and provides a net exposure 36 inches in diameter.

The joints between the frame and plate are made tight with fireclay. The plate is heated with twelve gas blast burners inserted through the sides of the furnace and so set that the gases of combustion impinge on the conical top of the furnace and are given a whirling motion. The temperature of the plate is measured on the radiating surface at the center by means of a thermo-couple rigidly attached to the plate by a small pointed clip which presses the point of the couple against the plate. The furnace permits of easy control and the temperature of the plate is even throughout and can be maintained uniform for any length of time with but slight variation.

"In conducting the test the furnace is inclined at the desired angle and the plate heated to the proper temperature. As soon as the temperature has become constant, the sample is placed before the plate at the prescribed distance from it and at the same angle as the plate, the position of the sample being such that the lower edge of the plate is 12 inches from lower edge of the sample. During the test the surface of the sample is exposed to air currents of known velocities. The sample is thus exposed until failure.

The burning brand test consists of applying to the standard sample a burning brand composed of maple strips 3 feet long, set side by side about 1 inch apart, forming a grid 3 feet square. The pieces are held rigidly together by cleats on the upper side. The brand is ignited by placing it over a gas burner consisting of rows of small jets, which play on all parts. The brand is permitted to burn until the wooden strips are thoroughly ignited and covered with incandescent coals, and then placed upon the sample.

"In conducting this test the sample is set at the angle of inclination adopted for the particular covering and subjected to the desired air currents. The burning brand is then placed upon the covering so that its lower edge is 12 inches from the lower edge of the sample, and permitted to remain until entirely consumed.

### **Flame Exposure**

"The flame exposure test consists of exposing the sample deck to the direct attack of a gas flame. For this purpose a cylindrical furnace, about 4 feet long, is used. It consists of a combustion chamber about 6 inches in diameter, having a narrow slotted orifice on the top 36 inches long and one-half inch wide, and



is provided with a shield which overlaps the sample and makes up the guide directing the air currents. Gas is supplied to the furnace through a perforated pipe, extending the full length of the combustion chamber. This is done in order to distribute the flow of gas evenly throughout the chamber.

"The furnace is set at the lower edge of the sample to be tested, the shield overlapping the lower edge of the sample about 10 inches. In operation the flame emerges from the combustion chamber through a slotted orifice in the top, and is carried to the sample by the air currents sweeping over an area of approximately 6 square feet, and being in direct contact with the surface of the sample. During the test the sample is exposed to the air currents in the same manner as in radiation and hot brand tests.

"In order to insure uniformity in the results a standard roof deck upon which to apply the roof coverings was adopted. The deck decided upon is 7 feet wide and 8 feet long, and constructed of seven-eighth inch by eight-inch undressed white pine boards, kiln dried, the boards being free from large or loose knots, sap or dry rot. These are laid across the shorter dimensions of the deck, spaced one-quarter inch apart, and nailed to four battens placed on the under side of the deck. The roof coverings are applied to the decks in accordance with the specifications advocated for their application in the field."

### What is Metal Lath?

**A**FTER propounding the above question the Associated Metal Lath Manufacturers answer it in these words:

"Chief among the factors of safety in the home investment is metal lath and stucco construction. Metal lath is a base and reinforcement for plaster and stucco. It is made from flat sheets of metal expanded into an open mesh and so formed that the plaster imbeds the lath, making a solid unit wall.

"Metal lath is not new or untried. On the contrary, it has been used for more than thirty years in all types of residence and industrial buildings. In the metal lath home its walls are proof against weather, fire and slow decay.

"Metal lath is a fire stop. Metal lath and stucco are proof against deterioration. Vermin can find no harborage where there is metal lath. Ceiling and walls of metal lath and plaster do not crack or discolor but harden into a stone-like unit. The expense of frequent painting is the price of beauty and proper maintenance in a wooden house, but the metal lath and stucco home grows mellow with the years."

### Sweeping Economics in Concrete Construction Promised

By C. F. CRAMER, Architect

**T**HE Patent Office has just allowed an invention which may revolutionize the construction of reinforced concrete floors, roofs, steps, etc.

All the expensive preparations, delays and obstructions now being suffered in such work are obviated in the following manner:

The bearing supports as the permanent walls, partitions, columns and girders being in place, floor, roofs, steps are laid in small interlocking units, which are parallelopiped in form and in full span lengths.

The units are of light weight concrete in sheet metal sheaths, reinforced with rods or fabrics of strength desired.

The units may be placed by unskilled labor, each piece being laid before the layer much as logs are laid in a corduroy road; when so laid the units are immediately ready for use, to walk over and work upon.

Floors, steps, roofs, etc., may be laid in any kind of weather or temperature without detriment to the work and without the usual waiting for wet concrete to harden and season. The costs of protecting such concrete work under the old methods are entirely eliminated.

The logs are secured in place by iron anchors at both ends, the reinforcing rods being extended, lapping or hooking as desired. Where fabric is used for reinforcement, the iron anchors are cast into the concrete unit.

Steps are run together by filling the trough-like interlocking groove with cement.

The units are to be standardized, "ready-made" in shop, there tested to guarantee, scientifically cared for till seasoned and then stored ready for delivery.

It is proposed that shops and agencies be established in districts, from which finished slabs are shipped a comparatively small distance to the job, insuring small freight costs.

The units are provided with holes where desired, for pipe, wires, lighting fixtures, line shafting, fasteners, etc., etc. Wood nailing strips are inlaid in the slab if desired. Pipe space in floors is afforded by cross furring. The work is designed so that it cannot be laid wrong. It is therefore "Foolproof."

The comfort of owner and contractor of hurried and delay penalty contracts is imagined when the building is ready to place floors, roofs, steps, etc., to have the complete "ready made" units at the job ready to place; they will probably be elated also that there will be NO WOOD FORMS, CHUTING TOWERS, RUNWAYS or protections to build, maintain or remove.

## *Illustrates Need for Sprinklers and Wired Glass*

**T**HE folly of leaving unprotected with wired glass and still frames windows of a structure with a flue-like court, and of failing to safeguard inflammable contents with a modern automatic sprinkler system, was evidenced through the destruction by fire of an otherwise well constructed building in New York City in October last.

The construction of the property in question, located at 13-15 West 28th street, is thus described by the New York Board of Fire Underwriters:

"Built about 1895; repair good. 10, 2 and 1 story and basement fireproof building of steel skeleton construction, with a roof structure covering about one-third of building, of 4-inch tile covered with corrugated iron and also a small basement extension at northwest corner. Area 4,950 square feet. Walls brick, supported by steel skeleton, independent east and west 20-16-12 inches; front stone facing and glass in wooden frames 1st and 2d, brick with stone trim above; finish plastered direct on brickwork, except on tile furring on west wall. Parapets 18 inches to 3 feet on all sides, adjoining buildings on east and west 2 feet or more lower. Partitions wooden on all floors above 1st, except 2-inch tile at lavatories. Cornice metal. Skylights one thin glass on metal 9x6 feet in main roof, two 6x5 feet in roof structure; wired glass on metal (screened) on 2 and 1 story portions, also on basement extension, these had thin glass in wooden frames underneath. Floors double, two thicknesses of  $\frac{7}{8}$ -inch pine on wooden sleepers filled between with cinder concrete on 4-inch cinder reinforced concrete segmental arches on 10-inch 25-pound to 12-inch 31.5-pound steel I beams 4 feet 6 inches to 5 feet 3 inches on centers, on 15-inch 60-pound to 15-inch 80-pound steel twin girders 16 feet 8 inches on centers, on built steel columns. Roof tile on arches and supports same as floors. Foundation of steel grillage on concrete footings to bed rock. Fireproofing beams and girders protected by arch construction on part of webs, balance unprotected and  $\frac{1}{2}$ -inch lime plaster ceiling on wire mesh on flanges; columns protected by 3 inches of tile, except those on 6th and one each 7th and 8th by one 1-inch lime plaster, enclosed space filled in with tile. Ceilings plastered direct on floor arches in basement, otherwise plastered on wire mesh hung from lower flanges on floor beams. Floor Openings—Stairs of iron frames without webs under stone treads, mosaic tile on landings; 4-inch tile shaft with openings protected by sub-standard metal covered paneled doors having wired glass in upper panels, doors had metal plates bolted to inside of doors on upper floors. Also one similar stairway basement to 1st open. One single and one double car

elevator shaft of 4-inch tile, wooden or sub-standard metal covered paneled doors having wired glass in upper panels to single car elevator shaft, and iron and wired glass doors and similar transoms to double car shaft; unprotected power openings to motors not enclosed in basement. Vent shaft of 4-inch tile, thin glass windows at opening to 2-inch tile enclosed lavatories each floor. All shafts are covered by skylights of thin glass in iron frames. Also shaft of 4-6-inch tile enclosing boiler flue; two openings in basement, one unprotected and one protected by iron cleanout door, and metal louvres (soldered) above roof, no openings to other floors."

After a critical study of all circumstances surrounding the fire, the conclusion of the engineers of the Board, were as follows:

1. The most serious defect, and the one which contributed chiefly to the spread of this fire, was the absence of any protection to windows in both buildings facing the common light court. The importance of avoiding such flue-like courts common to two buildings was emphasized.

2. The presence of an unusual number of light wooden partitions subdividing most of the floors added appreciably to the combustible material on which the fire fed. The contents of the various floors were also highly combustible as indicated in the detailed report under Occupancy.

3. A complete equipment of automatic sprinklers in a twelve-story tenant manufacturing building with highly combustible contents, wooden partitions and inferior floor opening protection, is the only effective means of preventing a repetition of similar fires of such magnitude.

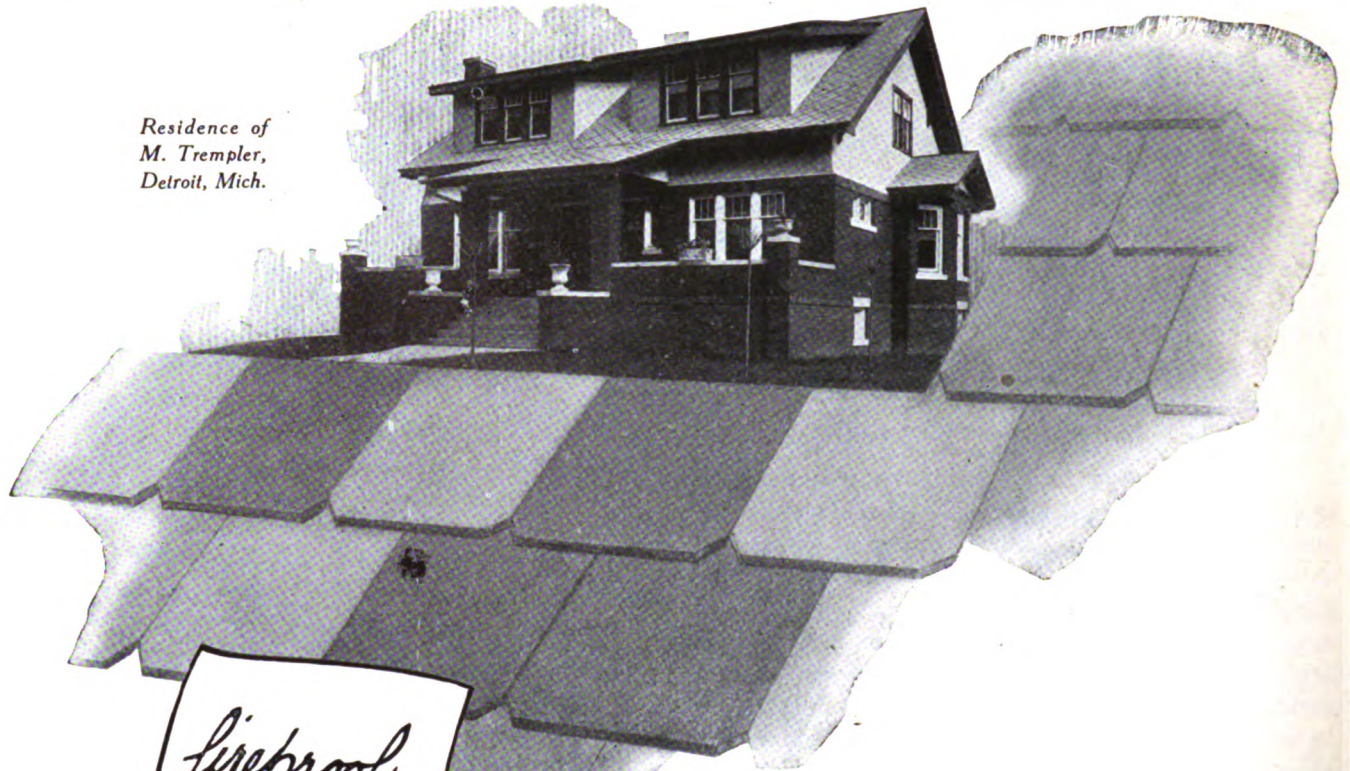
4. The need of scuppers to carry off water and the freedom with which water will penetrate cinder concrete arches was again illustrated in this fire.

### **Drop in Prices of Building Equipment**

**T**O induce building, which is greatly retarded through the unwillingness of leading financial concerns to make substantial loans upon intended projects manufacturers of a number of equipment devices have marked down the prices of their goods, the reductions ranging from five to twenty-five per cent. Thus the American Radiator Company dropped its prices 25 per cent.; pipefitting interests reduced their prices 5 per cent.; soil-pipe interests made preparations for a radical drop; manufacturers of porcelain knobs cut prices from 5 to 25 per cent., and electric conduit manufacturers arranged for a price reduction, says the Dow Service Daily Building Reports.



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**LATEST  
EDITION**

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New York City, N. Y., December, 1918

**Priceless**

## How to Make Cement Stick to Old Brick.

Answering the inquiry as to "what precautions are necessary to make a cement mortar coat stick to old brick and stone-work?" Alpha Aids says:

The first consideration is to be sure that the surface of the old work is perfectly clean and free from any dust or loose particles. Any loose pointing should be picked out and the joints thoroughly cleaned of loose material. It is an advantage to have the joints open for a short way back from the surface, as this gives the new coat opportunity to "key" into these spaces.

If the surface of the brick or stone has become oily or has had paint applied to it, the cement mortar will not adhere satisfactorily, and in this case either the surface must be cleaned by picking it away or by applying metal lath or woven wire cloth to which the new material can bond. The metal should be mounted on furring, nailed to wooden plugs in the brickwork in such a way as to hold it one-half or three-fourths of an inch clear of the brick.

Two coats of mortar are most often employed where an especially well appearing surface is desired. The proportion for the first and second coats is one part Portland cement to two and one-half parts clean sand.

In order to make the mortar work easier one-tenth part hydrated lime or well slaked lump lime is sometimes added. The old surface should be well wet down just before applying the new coat. Also the first mortar coat should be well scratched and wet before the second coat is applied.

After the final coat is applied, it should be protected from the sun and wind by hanging damp cloths in front of it for two days and keeping it wet down for three days. This prevents the surface from drying out too quickly.

The general offices of the Lime Association were recently removed to 918 G. Street, N. W. Washington, D. C., where better facilities for directing the increasing work of the organization exist than in the old quarters.

An inspiring poster entitled "The War is Over" has been issued to the trade by the American Clay Machinery Company, Bucyrus, Ohio. The Company takes a most optimistic view of the future, holding that the brick business, long hampered by restrictions will boom "and that all clay product industries will thrive." During the past two years the American Clay Machinery Company largely extended the size of its plant and installed a lot of modern machinery in order to carry out promptly and satisfactorily the work required of it by the National Government. By virtue of such improvement the corporation now finds itself peculiarly well equipped to supply the needs of clay material manufacturers.

Concrete telephone and telegraph poles are rapidly gaining in popularity and are being used in increasing numbers throughout the country. Their advantage over the unstable and short lived wooden poles are obvious, and it requires no great stretch of imagination to picture the time when the latter will be entirely displaced.

Unusual fire resisting qualities is claimed for "storm-King" a roofing composition manufactured by the Efficiency Products Company, of New York City.

The annual meeting of the Lime Association will be held at Pittsburgh on February 12 and 13.

New engineering projects in New York City are developing rather slowly, though it is anticipated distinct improvement will be shown by early Spring.

## Metal Lath Resists Fire

You dread fire, and yet the thought of your home burning may never impress itself upon you. Fire insurance is not a great expense, and it is taken out perfunctorily. The average attitude is indifference to fire risk, and, yet it is an ever-present factor. Your home stands in daily peril of being gutted or completely destroyed by fire unless you have prevention protection against it. Protection comes from two sources generally speaking: the city fire department, a human element, and the natural mechanical guards that you build into the very structure of your home. Fire departments afford protection to a marked degree; we have statistics to prove that, but, the big question for the home owner to answer is: Can I prevent a fire or easily confine it, regardless of outside help? The fire department is, after all, a last resort.

Metal lath and stucco for the exterior of your home will protect it against fire. Metal lath on walls and ceilings will confine any fire that may originate inside.

If your home is to be outside the city, you need metal lath construction because it is the only fixed protection you can get.

Metal lath construction is fire-resistant because the plaster has a firm grip upon the lath. Heat on such construction has little effect; fire is confined, retarded and prevented from breaking through and attacking the vital parts of the structure.—"Home Building."

Formal complaint having been made against the Carter Paint Company, of Liberty, Ind., of using unfair methods in seeking business, a hearing in the matter will be held before the Federal Trade Commission at Washington, D. C. on February 25th. The Carter Company manufactures roof and metal paints, and water-proofing preparations.



## The Fireproofing News



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### Concrete Brick

Concrete brick are suitable for many classes of structures. They have ample strength and can be made of any required density. Variations in density are sometimes necessary in order to insure firm bonding with mortar when laid up in the wall. Varying degrees of density are secured by varying the grading of the aggregate and the amount of cement used within certain limits. Like concrete block, concrete brick may also be faced. Facings vary in thickness from 1-16 inch to 1 inch or more and can be of a variety of colors obtained in a manner similar to that already described when discussing surface finish of concrete block.

If the waterproof qualities of the concrete brick wall are to depend on the facing of the brick, and if the body of the brick is made slightly porous to afford a better bond with the mortar joints, then

the face should be deep enough to extend back of the line of a raked joint, if such joints are to be used in the work.

#### Principles of Manufacture

The same general rules apply to the manufacture of concrete brick as apply to the manufacture of concrete block, although the aggregate ranges smaller,  $\frac{3}{8}$  inch usually being the maximum. Different processes are used to make concrete brick. These range from pressing a suitable mortar into molds or compacting the mixtures in machines exerting great pressure on a stiff, plastic or semi-dry mixture of concrete. The pressure process produces, with properly proportioned concrete, a very dense, strong brick, comparing favorably in appearance and quality with the best brick manufactured of any other material.

Concrete products manufacturers will profit most by making concrete

products of high quality. Neither cement nor labor should be spared to secure proper density, strength, curing and appearance.

When purchasing any kind of machinery it is well to bear in mind that price is not necessarily a measure of quality or desirability. A careful consideration should be given to the merits of a machine as well as to its price. In using semi-dry mixtures of concrete, considerable tamping must be done or considerable pressure exerted to compact materials into a homogeneous mass. The same applies to stiff, plastic mixtures, and with such processes excellent results will be obtained when the products are cured under the conditions of moisture and warmth described.

The annual meeting of the American Society of Heating and Ventilating Engineers will be held in New York City on January 28-30.



### Prospects for Sheet Metal Jobbers

Among the many important topics which came up for discussion at the meeting of the Metal Branch of the National Hardware Association at Atlantic City on December 12 says, "Sheet Metal" were: The future trend of prices, particularly as to differentials, the promotion of the terne plate industry, conservation through the reduction in grades and coatings of tin and terne plate and some impending changes in the eaves trough and conductor pipe situation.

It was unfortunate that the meeting should have been held so close on the announcement from Washington of the reduction in mill prices, and also that the price Fixing Committee of the War Industries Board would cease to function on December 31. These matters had not yet been thoroughly digested, and it was difficult to find anyone who could make a statement feeling 100 per cent. certain that he was right.

The mill men had come to the meeting, or at least seemed to have started for it, feeling that if the Government had removed all price restrictions there would be substantial advances on many products. The fact that the lower prices had been announced placed them somewhat at sea, but still the general sentiment prevailed that higher prices would control eventually. They backed up their contention by pointing to the fact that the mills generally had not been rushing around to load up their order books. Several of the mills reported having orders on hand sufficient to carry on for three months.

When Chairman W. H. Donlevy opened the meeting and had presented the report of the Metal Committee, in which he announced the addition of 43 new members, he asked for a free discussion on the present situation and the problems confronting the jobbing industry through the prospective removal of the price schedules. The general sentiment prevailed that operating expenses such as rents, salaries, trucking, etc., had advanced so sharply under war conditions that it would be financially impossible for any jobber to conduct his business successfully if he were to cut into the differentials allowed under the price fixing schedule. The discussion partook of the nature of an experience meeting in which many

of those present related something of the unusual growth of their operating expenses.

In reply to a question as to the possible action of the Government in disposing of its surplus materials, Chairman Donlevy announced that assurance had been received from the authorities that it was not planned to dump this material on the market to the detriment of business. The plan is to store the major portion of all such material and unload it gradually so as to cause no break in the market.

In the discussion on the advisability of reducing the grades, sizes and weights of coatings of tin and terne plate, the sentiment seemed to prevail that such a step would be highly desirable. The committee having this matter in charge was continued with instructions to take the matter up and report at the June meeting at Pittsburgh.

The prospects of the roofing terne industry were discussed next, some members expressing as their opinion that this business would return to about its former proportions, although it was not clearly expressed that any movement was to be fathered to promote the quick return. One or two of the members expressed the thought that some missionary work is necessary to help along this return.

H. A. Mackenzie, Canton, was requested to say something about the eaves trough and conductor pipe situation. He recommended the elimination of certain sizes for which there is little excuse and little call, and intimated that such sizes might be eliminated in eaves trough, conductor pipe and ridge roll in the immediate future. He stated that the policy of f.o.b. factory shipments is likely to be continued.

### Iron and Steel Situation Abroad

Comment from abroad received through trade channels shows that the iron and steel situation has developed strongly upon the release of these metals from Government restriction and that at present every effort is being made to make provision for the greatly increased demand for material which has grown out of the cessation of hostilities and the need for immediate repairs on the damage done during the war. So great has been the demand that the United States is mentioned as a possible means of filling some

of the orders for commercial steel and iron.

This news is greeted enthusiastically in trade circles and it is felt that the development of an overseas demand will do much to bring about a speedy readjustment in conditions here. Reports from different sections state that mills are at present operating at an average of about 75 per cent. of capacity. In some instances the production rate has attained a level of 90 per cent. and in others it is below 75 per cent. Difficulty is experienced in any drawing up of estimates regarding the actual amount of labor at present unemployed. It is reported that the number has reached about 20,000.

The curtailment of production due to the cancellation of war contracts has resulted in a constant shifting of labor. In a good many cases, however, the men released from war work have found places in some commercial projects which call for immediate employment of more workers. The number of men at present unemployed in the steel districts has led some men in the trade to look for immediate reductions in the scale of wages, but it is generally felt that this move will not be made for some time and certainly not until some indication has been given by the United States Steel and its subsidiaries that a reduction is desirable.

Export inquiry for plates is reported to be brisk and some finished products which go into the manufacture of automobiles and trucks are being sought as the manufacturers resume commercial production.

### Metal Windows as Fire Retardants

A striking example of the worth of metal windows in preventing fire from entering the premises was afforded in the burning on October 14th last, of a wholesale millinery building in Milwaukee. Filled with highly inflammable material the building soon became a roaring furnace. The flames leaping across the street damaged a prominent structure supplied with wooden window frames severely, while the adjoining building of the telephone company, equally exposed to the flames, escaped loss either from smoke or water, being safeguarded by hollow-metal fire-retarding windows supplied by the Consolidated Sheet Metal Works of Milwaukee.

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DECEMBER 1918



VOLUME SEVEN

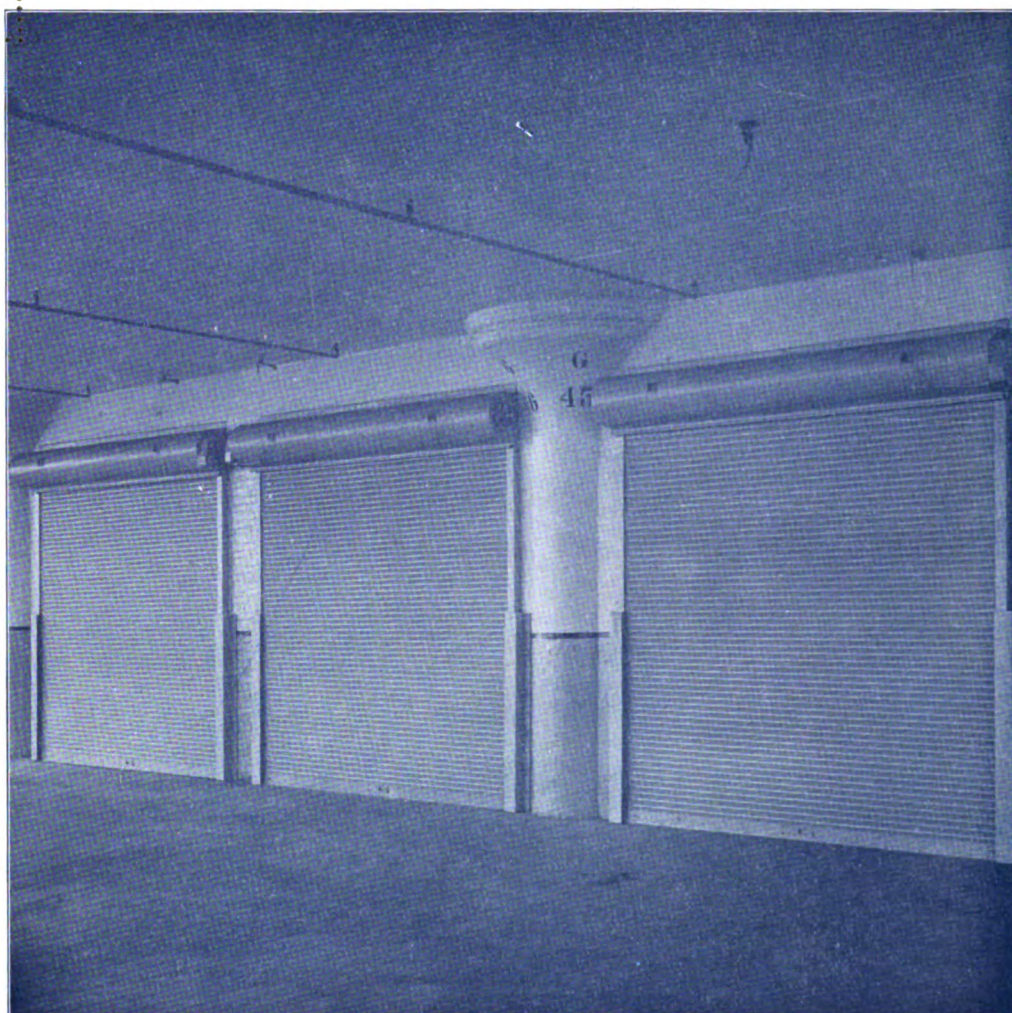
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